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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

November 19, 1985 Volume 1060 Number 3

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Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Oct. 12, 1985 and is announced in the *Official Gazette* at 1058 O.G. 26 on Sept. 24, 1985.

International PCT fees have been changed effective Oct. 29, 1985 and were announced in the *PCT Gazette* on Aug. 29, 1985 and in the *Official Gazette* at 1058 O.G. 26 on Sept. 24, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed:	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority, all cases	750.00
International fees	
Basic fee (first 30 pages):	280.00
Basic Supplemental fee (for each page over 30):	6.00
Designation fee for the first 10 national or regional offices:	70.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Oct. 21, 1985.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Nov. 16, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,358,859 through 4,359,782
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges, as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,331,594, Re. S.N. 780,734, Filed Sept. 26, 1985, Cl. 260/112.5R, A-21978 ANTIBIOTICS AND PROCESS FOR THEIR PRODUCTION, Robert L. Hamill, et al., Owner of Record: *Eli Lilly and Co., Indianapolis, Ind.*, Attorney or Agent: Arthur R. Whale, et al., Ex. Gp.: 123

4,395,675, Re. S.N. 759,404, Filed July 26, 1985, Cl. 323/271, TRANSFORMERLESS NONINVERTING BUCK BOOST SWITCHING REGULATOR, Rouben Toumani, Owner of Record: *Bell Telephone Laboratories, Inc., Murray Hill, N.J.,* Attorney or Agent: S. E. Hollander, Ex. Gp.: 212

4,406,037, Re. S.N. 780,737, Filed Sept. 26, 1985, Cl. 17/11, DEVICE FOR CUTTING SLAUGHTERED POULTRY IN SEPARATE PIECES, Jacobus E. Hazenbroek, et al., Attorney or Agent: Linco Holland Engineering B. V., Broekhuizerweg, The Netherlands, Ex. Gp.: 327

4,506,355, Re. S.N. 773,770, Filed Sept. 9, 1985, Cl. 369/32, METHOD AND APPARATUS FOR INFORMATION RETRIEVAL FROM AN OPTICALLY READABLE STORAGE MEDIUM, Ludwig Ceshkovsky, et al., Owner of Record: *MCA Discovision, Inc., Costa Mesa, Calif.,* Attorney or Agent: Ronald J. Clark, Ex. Gp.: 235

4,522,870, Re. S.N. 782,981, Filed Sept. 19, 1985, Cl. 428/252, LINERLESS DOUBLE-COATED PRESSURE-SENSITIVE ADHESIVE TAPE, Donald L. Esmay, Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.,* Attorney or Agent: Donald M. Sell, et al., Ex. Gp.: 154

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,348,683, Reexam. No. 90/000,864, Requested: Sept. 17, 1985, Cl. 310/787, METHOD OF SEPARATING PARTICLES IN LIQUID SUSPENSION IN A HYDROCYCLONE FOR SEPARATING ARTICLES IN LIQUID SUSPENSION, Nils Anders Lennart Wikdahl, Owner of Record: *Inventor,* Attorney or Agent: Leydig, Voit, et al., Ex. Gp.: 212, Requester: Hydrocyclone Technology, Inc., Atlanta, Ga.

3,682,234, Reexam. No. 90/000,874, Requested: Oct. 4, 1985, Cl. 164/433, STRUCTURE FOR THE CONTINUOUS CASTING OF METAL BARS, Ralph A. Vogel, Owner of Record: *Essex International, Inc., Ft. Wayne, Ind.,* Attorney or Agent: Molinare, Allegretti, et al., Ex. Gp.: 325, Requester: Southwire Co., Arlington, Va.

4,055,494, Reexam. No. 90/000,872, Requested: Oct. 4, 1985, Cl. 210/715, THICKENING DEVICE AND METHOD, Robert C. Emmett, Jr., Owner of Record: *Envirotech Corp., Salt Lake City, Utah,* Attorney or Agent: Senniger, Powers, et al., Ex. Gp.: 136, Requester: Eimco Process Equipment Co., St. Louis, Mo.

Adverse Decisions in Interference

In the designated interference involving the indicated claims of the following patents, final decision having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,803,105, Paolo Galli and Giovanni Di Drusco, POLYMERIZATION CATALYSTS, Interference No. 100,152, decided Mar. 1, 1985, claims 1–7.

Patent No. 3,836,392, Benno Lux, Roland Funk, Herbert Schachner and Christian Triquet, PROCESS FOR INCREASING THE RESISTANCE TO WEAR OF THE SURFACE OF HARD METAL CEMENTED CARBIDE PARTS SUBJECT TO WEAR, Interference No. 99,433, decided June 29, 1984, claims 10–12.

Patent No. 4,149,079, Dan Ben-Zeev and Dan Inbar, METHOD OF AND MEANS FOR SCANNING A BODY TO ENABLE A CROSS-SECTION THEREOF TO BE RECONSTRUCTED, Interference No. 100,881, decided Aug. 28, 1984, claims 6, 7, 9, 14 & 21.

Patent No. 4,175,984, Bengt A. Johansson, METHOD AND A DEVICE FOR INITIATING AN OXYGEN DESEAMING PROCESS, Interference No. 101,241, decided July 2, 1985, claim 1.

Patent No. 4,329,302, Donald J. Hanahan and R. Neal Pinckard, SYNTHETIC PHOSPHOGLYCERIDES POSSESSING PLATELET ACTIVATING PROPERTIES, Interference No. 101,094, decided Mar. 5, 1985, claims 1–4.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Appeals and Interferences.

PATENT NOTICES

Certificates of Correction for the Week of Nov. 19, 1985

Re. 31,849	4,498,904	4,521,843	4,532,267
D. 279,438	4,499,907	4,521,903	4,532,356
D. 279,740	4,500,439	4,522,334	4,532,631
D. 279,842	4,500,626	4,522,867	4,532,750
D. 280,044	4,501,616	4,523,221	4,533,624
D. 280,100	4,502,275	4,523,431	4,533,640
4,109,088	4,502,861	4,523,586	4,533,713
4,300,673	4,502,865	4,523,627	4,533,747
4,322,352	4,503,044	4,523,994	4,534,466
4,351,037	4,503,169	4,524,546	4,534,765
4,353,874	4,503,513	4,524,990	4,535,013
4,380,719	4,504,482	4,525,318	4,535,619
4,383,442	4,504,743	4,525,450	4,536,366
4,403,920	4,504,948	4,525,838	4,536,446
4,426,006	4,504,963	4,525,895	4,536,755
4,432,879	4,509,104	4,526,144	4,536,797
4,432,971	4,509,876	4,526,560	4,536,858
4,436,637	4,509,948	4,526,579	4,536,957
4,445,213	4,510,265	4,526,996	4,537,120
4,456,547	4,510,577	4,527,188	4,537,425
4,460,315	4,511,497	4,527,269	4,537,614
4,464,068	4,512,012	4,527,273	4,537,667
4,470,113	4,512,642	4,527,282	4,537,849
4,472,656	4,513,744	4,527,645	4,538,016
4,473,365	4,514,807	4,527,703	4,538,076
4,480,234	4,514,812	4,527,882	4,538,147
4,480,641	4,515,844	4,528,309	4,538,167
4,482,570	4,516,384	4,528,774	4,538,669
4,483,352	4,517,735	4,529,528	4,538,893
4,484,520	4,518,097	4,529,735	4,539,316
4,485,486	4,519,513	4,529,794	4,539,796
4,486,791	4,519,900	4,530,021	4,540,307
4,488,141	4,519,942	4,530,062	4,540,675
4,491,342	4,520,053	4,531,213	4,540,717
4,494,017	4,521,368	4,531,610	4,541,105
4,496,726	4,521,443	4,531,883	4,542,309

Disclaimers

4,017,003.—*Richard N. Heino,* Ashby, Mass. ARTICLE DISPENSING MACHINE. Patent dated Apr. 12, 1977. Disclaimer filed Aug. 23, 1985, by the assignee, *Package Machinery Co., Inc.*

Hereby enters this disclaimer to claims 1–3 of said patent.

4,345,348.—*Charles P. Hall,* Muir Beach, Calif. WATERBED MATTRESS WITH A BAFFLE. Patent dated Aug. 24, 1982. Disclaimer filed Oct. 12, 1984, by the assignee, *Monterey Manufacturing Co.*

Hereby enters this disclaimer to claims 1–7, and 9 of said patent.

4,448,962.—*Tsutomu Irikura,* Tokyo; *Seigo Suzue,* Saitama; *Akira Ito,* Saitama; *Hiroshi Koga,* Saitama, all of Japan. SUBSTITUTED QUINOLINE CARBOXYLIC ACID DERIVATIVES. Patent dated May 15, 1984. Disclaimer filed Sept. 23, 1985, by the assignee, *Kyorin Seiyaku Kabushiki Kaisha.*

Hereby enters this disclaimer to all claims of said patent.

4,483,754.—*Hiroyuki Shiroki,* Nobeoka, Japan. ELECTROLYSIS OF SODIUM CHLORIDE WITH THE USE OF ION EXCHANGE MEMBRANES. Patent dated Nov. 20, 1984. Disclaimer filed Sept. 11, 1985, by the assignee, *Asahi Kasei Kogyo Kabushiki Kaisha.*

Hereby enters this disclaimer to claims 1 to 7 of said patent.

Dedication

3,789,972.—*Joseph K. Kraft,* Gettysburg, Pa. TRANSPORTATION DEVICE. Patent dated Feb. 5, 1974. Dedication filed Aug. 20, 1985, by the assignee, *Westinghouse Electric Corp.*

Hereby dedicates to the public the entire term of said patent.

Disclaimer and Dedication

4,243,563.—*Richard L. Ferm,* Lafayette, Calif. CALCIUM POLYSULFIDE SOIL STABILIZATION METHOD AND COMPOSITIONS. Patent dated Jan. 6, 1981. Disclaimer and dedication filed Sept. 23, 1985, by the assignee, *Chevron Research Co.*

Hereby disclaims and dedicates to the public the remaining term of said patent.

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The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
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	Miami–Dade Public Library	(305) 375-2665
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New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
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	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF October 12, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	12-28-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	6-07-84
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	9-30-83
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	3-21-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	6-15-84
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-28-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	8-30-83
DESIGN, GROUP 290—K. L. CAGE, Director	3-07-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	8-29-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-14-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	6-27-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-02-84

Expiration of patents: The patents within the range of numbers indicated below expire during October 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,403,406 to 3,4C8,656, inclusive

Plant Patents . . . . . Numbers 2,835 to 2,843 inclusive

REEXAMINATIONS

NOVEMBER 19, 1985

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,171,729 (420th)

METHOD OF MAKING A PARISON

Walter Andersen, Streator, Ill., assignor to Virginia Kremm

Reexamination Request No. 90/000,038, Jul. 29, 1981.

Reexamination Certificate for Patent No. 3,171,729, issued Mar. 2, 1965, Ser. No. 127,203, Jul. 27, 1961.

Continuation-in-part of Ser. No. 30,818, May 23, 1960, Pat. No. 3,178,728.

Int. Cl.[4] C03B *7/00*

U.S. Cl. 65—76

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1-4 are cancelled.

[1. The method of making a bottle parison which comprises the steps of opening the neck orifice of a parison mold, sucking air through the other end of said mold by a vacuum drawn through the opened neck orifice of the mold, introducing a charge of glass through the other end of the mold, seating a closure member in the neck orifice of the mold as the glass charge reaches the neck orifice, closing the other end of said mold, and immediately after the glass fills the portion of said mold adjacent said neck orifice, withdrawing the closure member from the neck orifice and counter-blowing the parison therethrough.]

B1 3,777,283 (421st)

TRANSPARENT SLIDE FOR THE EXAMINATION OF LIQUID SPECIMENS

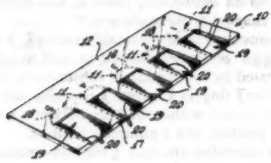
Carlos D. Elkins, 1414 S. Fairplain Ave., Whittier, Calif. 90601

Reexamination Request No. 90/000,679, Dec. 3, 1984.

Reexamination Certificate for Patent No. 3,777,283, issued Dec. 4, 1973, Ser. No. 246,203, Apr. 21, 1972.

Int. Cl.[4] G02B *21/34*

U.S. Cl. 356—246



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1-8 are cancelled.

New claim 9 is added and determined to be patentable.

9. A slide for use in the examination of liquid specimens, said slide comprising:

a thin flat plate having flat side surfaces;

at least one examination chamber defined in said plate as a thin, flat pocket having an open side spaced a substantial distance from, and facing toward one edge of said plate, said chamber being defined between two generally parallel and uniformly spaced sidewalls formed by said plate, and an edge wall extending between said sidewalls, at least one of said sidewalls being transparent and wherein said sidewalls diverge slightly at a preselected angle toward said open side;

one of said sidewalls having a free edge overlying said open side, and the other of said sidewalls extending beyond said open side to said one edge and forming a supporting surface for receiving a quantity of specimen liquid to be examined;

and the space between said sidewalls being with the range of 0.004 to 0.020 of an inch and sufficiently narrow to cause the liquid to be drawn into and held in the chamber by capillary action.

B1 3,909,883 (422nd)

LOCKING BASE FOR PLASTIC COMPONENTS

James F. Fegen, Chicago, Ill., assignor to Richco Plastic Company, Chicago, Ill.

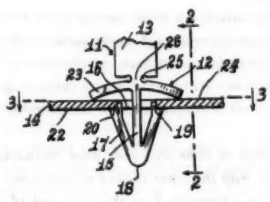
Reexamination Request No. 90/000,091, Oct. 20, 1981.

Reexamination Certificate for Patent No. 3,909,883, issued Oct. 7, 1975, Ser. No. 420,704, Nov. 30, 1973.

Division of Ser. No. 229,800, Feb. 28, 1972, Pat. No. 3,777,052.

Int. Cl.[4] A44B *21/00*

U.S. Cl. 174—138 D



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 4 is cancelled.

Claims 1 and 6 are determined to be patentable as amended.

Claims 2, 3, 5 and 7, dependent on an amended claim, are determined to be patentable.

1. In a support integral with a component and a panel having *upper and lower surfaces and* a circular aperture therein for mounting the component on one *surface* [face] of the panel, said support comprising:

(a) a resilient substantially elongated base [connected to the component and having opposed free ends arched in the direction of the panel,] *having a length greater than its width and connected to the component, a stem, and a pair of yieldable wings,*

(b) said [a] stem extending centrally from *said* [the] base

and having an upper end and a lower end [and through the aperture],

(c) said elongated base integral with the upper end of said stem and having free ends extending an equal distance from either side of said stem and having a combined length substantially exceeding said circular aperture diameter,

(d) said free ends of said base being arched in the direction of said panel and terminating in tips,

(e) said stem having a width substantially equal to said circular aperture diameter to substantially span said aperture when inserted therein,

(f) said stem having a longitudinal axis, being flat and providing substantial clearance on either side thereof with the walls of said aperture,

(g) the upper end of said stem having a uniform width and the lower end of said stem being tapered and said uniform width upper end being of sufficient length to extend beyond said panel lower surface when said support is positioned in said panel,

(h) said stem being solid and uninterrupted in cross-section throughout its length and having an apex,

(i) the lower end of said stem having said [a] pair of yieldable wings [integral with and extending from the free end of said stem toward said panel,] *integrally connected to said apex and projecting angularly upwardly from said apex free of said stem toward and in alignment with said free end of said base on either side of said stem,*

(j) said wings having diverging free ends [one aligned with each of said base ends and normally spread beyond the perimeter of said circular aperture,] and tips thereon and being of a width substantially less than the diameter of said aperture and substantially equal to the width of said stem at said apex,

(k) said wings having an inside surface and an outside surface,

(l) the distance between said inside surfaces of said wings at their free ends being less than the diameter of said aperture and the distance between the outside surfaces of said wings at their free ends being greater than the diameter of said aperture,

(m) said wings at their free ends each including a shoulder engageable with the lower surface of said panel at said aperture and an extension [on the free end of each wing] adapted to enter the aperture when the support is mounted, [said extensions and said wing ends being contoured to bear against the perimeter of said aperture and said panel to prevent spreading of said wings and to center said support in the aperture when the support is mounted on the panel]

(n) said constant width end of said stem extending a substantial distance below said shoulders,

(o) said stem being of sufficient length so that a portion of said stem projects out of said aperture and beyond said upper surface of said panel when said support is positioned in said aperture and said shoulders of said wings free ends engage said lower surface of said panel,

(p) and said base being arched and spaced from said panel when said support is in final position in said aperture to provide tip contact only with said upper surface of said panel to thereby provide yielding action to said support when mounted in said panel in a direction substantially parallel to the axis of said stem.

B1 4,072,252 (423rd)

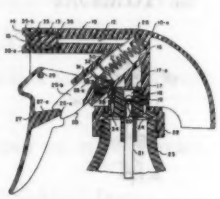
HAND OPERATED SPRAYER WITH AUTOMATIC CONTAINER VENT

Emile B. Steyns, Helmond, Netherlands, and Jerry H. Miller, Miami Lakes, Fla., assignors to The AFA Corporation, Miami Lakes, Fla.

Reexamination Request No. 90/000,590, Jul. 12, 1984.
Reexamination Certificate for Patent No. 4,072,252, issued Feb. 7, 1978, Ser. No. 693,383, Jun. 7, 1976.
Continuation-in-part of Ser. No. 656,547, Feb. 9, 1976, abandoned.

Int. Cl.[4] B67D *5/40*

U.S. Cl. 222—341



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **19–22** is confirmed.

Claims **1** and **13** are determined to be patentable as amended.

Claims **2–12** and **14–18**, dependent on an amended claim, are determined to be patentable.

New claims **23–30** are added and determined to be patentable.

1. A manually operated liquid dispenser adapted to be attached to a container holding a liquid to be dispensed comprising

a. component retaining body means, the bulk of which is located outside of [said] *the* container when attached thereto,

b. *said component retaining body means having* an outwardly opening bore defined within the interior of the component retaining body means,

c. a piston shiftable within the bore and bounding a variable compartment with said bore,

d. *said component retaining body means having* inlet and outlet means [disposed within the component retaining body means] *therein* and *communicating with said bore* for delivering liquid into and out of the compartment bounded by the piston and bore *and comprising a housing having said bore therein and an intake body fixed to said housing and adapted to be coupled to the container,*

e. operating means *associated with said housing*[,] *and* including a trigger *pivotally mounted to said housing and* normally actuated by application of substantially horizontal force by [the] fingers [thereto] *engaging said trigger,* for shifting the piston within the bore between a normal, non-pumping position and a pumping position,

f. venting means extending through [the body means] *said housing and said intake body* and opening, at one end, into the bore *and, at another end, into the container,* and

g. a single unit *incorporated into said piston for* providing seal means for the *opening of said* venting means [and the compartment] *into said bore,* the seal means in normal non-pumping position preventing communication to the ambient air from the venting means and the compartment, thereby forming a positive closure for the container, *and* the seal means in pumping position permitting free com-

munication between the venting means and the ambient air.

B1 4,213,317 (424th)

BLANK FILLER PLATE FOR LOCK EDGE CUT-OUT

Robert O. Ruff, Cincinnati, Ohio, assignor to American Standard Inc., New York, N.Y.

Reexamination Request No. 90/000,503, Feb. 14, 1984.
Reexamination Certificate for Patent No. 4,213,317, issued Jul. 22, 1980, Ser. No. 13,348, Feb. 21, 1979.
Int. Cl.[4] E05B *9/08, 63/00*
U.S. Cl. 70—450

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–8** are cancelled.

New claims **9–16** are added and determined to be patentable.

(9) A blank filler plate which is releasably mountable in a lock edge cut-out of a steel door without fastening means visible from the exterior thereof and without the use of hand tools, comprising

a generally elongated rectangular member having a forward face exposed to view when the blank filler plate is operatively mounted in the lock edge cut-out of a door, a rearward face, and a pair of opposed parallel flanges formed along the opposed vertical edges of the filler plate adapted to releasably couple with the respective edges of the lock edge cut-out, and

resilient compressible means mounted on the rearward face of the plate, the uncompressed depth of said compressible means measured perpendicular to said rearward face being substantially less than the long dimension of said plate, said means (a) permitting the plate and compressible means to be simultaneously manually positioned through the cut-out at an angle to the plane thereof from the exterior of the door and pressed inwardly and slid sideways in the cut-out to release or engage the flanges of the filler plate relative to the respective edges of the cut-out such that the filler plate may be selectively removed or inserted from the cut-out from outside of the door without the use of hand tools, and (b) urging the filler plate outwardly of the cut-out when the plate is operatively located in the cut-out with its forward face parallel to the plane of the cut-out such that the flanges are biased against the respective rear marginal portions of the door edge surrounding the respective vertical edges of the cut-out to hold the filler plate in place in the cut-out without externally visible fastening means,

said flanges being offset rearwardly from said forward face a distance substantially equal to the gauge of the sheet metal used to form the door edge such that when operatively located in place in the cut-out the forward face of the filler plate is substantially flush with the outer surface of the door edge and the flanges are hidden from view.

B1 4,289,791 (425th)

ICE CREAM CONE WITH JACKET ATTACHED AND METHOD FOR PRODUCING SAME

David Weinstein, Baltimore, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Reexamination Request No. 90/000,328, Feb. 16, 1983.
Reexamination Certificate for Patent No. 4,289,791, issued Sep. 15, 1981, Ser. No. 36,227, May 4, 1979.
Continuation-in-part of Ser. No. 885,278, Mar. 10, 1978, and Ser. No. 910,886, May 30, 1978.
Int. Cl.[4] B65G *59/00;* **A21D** *13/00*
U.S. Cl. 426—139

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **6–8, 10, 12, 13** and **15** is confirmed.

Claims **1–5** and **14** are cancelled.

Claims **9** and **11** are determined to be patentable as amended.

New claims **16–25** are added and determined to be patentable.

12. A method of adhering sanitary jackets onto each of a succession of cones of a conformal shape with said jackets comprising:

conveying a plurality of cones, apex first, along a conveyor at regularly spaced intervals;

storing a vertical stack of said paper jackets above said conveyor and the conveyed path of said cones;

dispensing said jackets one at a time from said stack to a work holding means and injecting a vaporized mixture of about 85% propylene glycol and about 15% water into the interior thereof;

dispensing said vapor injected jackets onto said conveyor intermediate said cones and at substantially equal spaced intervals with said cones; and

inserting a trailing cone into and in position with a leading jacket while the latter is still moist from the vapor injection.

REISSUES

NOVEMBER 19, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,031
CAMBERING VEHICLE

Frank J. Winchell, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Original No. 4,325,565, dated Apr. 20, 1982, Ser. No. 126,877, Mar. 3, 1980. Application for reissue Jan. 13, 1983, Ser. No. 457,759

Int. Cl.⁴ B62K *5/02*

U.S. Cl. 280—282 **8 Claims**

4. In a cambering vehicle having an engine for vehicle propulsion, a cambering steering fork assembly at the front of the vehicle mounting a road wheel at the lower end thereof and manual steering means at the upper end thereof, a pair of laterally spaced rear road wheels supporting a non-cambering support platform for the feet of the vehicle operator, a cambering main frame having a forward portion operatively mounting the steering fork assembly and a cambering seat support at the rear of the vehicle for the vehicle operator connected to the main frame for cambering movement therewith about a camber axis to allow the operator to freely lean into turns while standing or seated and while cambering the vehicle with his feet on the support platform characterized in that the engine is mounted on the steering fork assembly and is drivingly connected to the front wheel of the steering fork assembly and that the support platform extends between the forward portion of the main frame and the seat support and is substantially unobstructed to facilitate operator entry and egress and operator stabilization of the vehicle during powered cambering maneuvers through foot impressed loads to the platform in the event an unbalanced condition occurs.

Re. 32,032
METHOD OF DENSIFYING OPEN-CELLED POLYURETHANE MATERIAL

Winslow L. Pettingell, Wooddale, Ill., assignor to Foam Cutting Engineers, Inc., Addison, Ill.

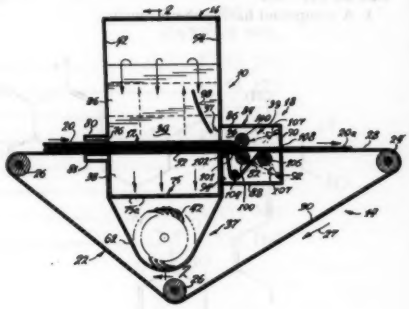
Original No. 4,228,076, dated Oct. 14, 1980, Ser. No. 44,042, May 31, 1979. Continuation-in-part of Ser. No. 876,736, Feb. 10, 1978, abandoned. Application for reissue Oct. 26, 1983, Ser. No. 545,481

Int. Cl.⁴ B29D *27/00*

U.S. Cl. 264—101 **10 Claims**

1. A method of densifying a mass of fully cured open-celled polyurethane foam, said method comprising the consecutive steps of:

[passing] *creating a suction to pass* heated gaseous material entirely through the mass, the temperature of said gaseous material being in the range of about 425° F. to 460° F. and the velocity of said gaseous material being insufficient to destroy the integrity of the cell walls of the mass, said gaseous material being inert with respect to the polyurethane, and the period of exposure of the mass to the gaseous material being insufficient to allow charring of the mass, yet sufficient to raise the entire mass substantially uniformly to a temperature between about 365° F. and 435° F.;



compressing the mass while its temperature is between about 365° F. and 435° F. to reduce its thickness and thus increase its density to a desired degree; and

permitting the mass to cool.

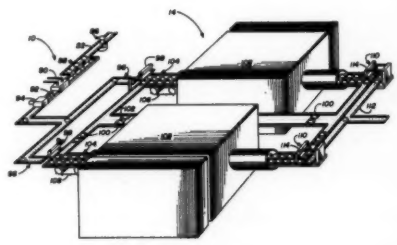
Re. 32,033
AUTOMATED SLICE PROCESSING

James R. Moreland, Plano, and Robert M. Montgomery, Sherman, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Original No. 3,888,674, dated Jun. 10, 1975, Ser. No. 418,637, Nov. 23, 1973. Continuation of Ser. No. 352,690, Feb. 25, 1982, which is a division of Ser. No. 280,317, Aug. 14, 1972, Pat. No. 3,812,947, which is a division of Ser. No. 845,733, Jul. 29, 1969, Pat. No. 3,765,763. Application for reissue Jan. 30, 1984, Ser. No. 575,473

Int. Cl.⁴ B44D *1/18;* **B05B** *13/02;* **B23Q** *5/22*

U.S. Cl. 430—311 **2 Claims**



1. A method of spraying a fluid on a semiconductor slice comprising the steps of:

a. positioning a semiconductor slice on a spindle;

b. securing said semiconductor slice to said spindle;

c. lowering said spindle including said secured semiconductor slice into a chamber;

d. rotating said spindle including said secured semiconductor slice once said spindle has been lowered into said chamber; and

e. spraying said fluid onto said semiconductor slice while it is rotating within said chamber.

Re. 32,034

13-HALO AND 13-DEOXY DERIVATIVES OF C-076 COMPOUNDS

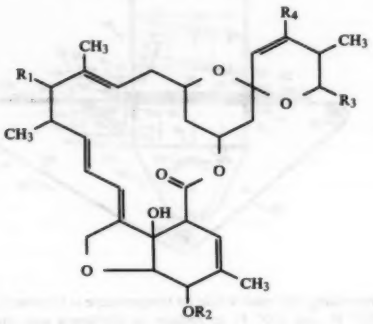
John C. Chabala, Westfield; Michael H. Fisher, Ringoes, and Helmut H. Mrozik, Matawan, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Original No. 4,173,571, dated Nov. 6, 1979, Ser. No. 861,919, Dec. 19, 1977. Application for reissue Jul. 18, 1984, Ser. No. 632,152

Int. Cl.[4] C07D *493/22*

U.S. Cl. 549—264 **18 Claims**

1. A compound having the formula:



wherein the broken line indicates a single or a double bond;

R_1 is hydrogen or halogen;

R_2 is hydrogen, methyl or loweralkanoyl;

R_3 is [n-propyl] *isopropyl* or sec-butyl; and

R_4 is present only when the broken line indicates a single bond and represents hydrogen, hydroxy, loweralkanoyloxy, loweralkylthio, loweralkylsulfinyl, loweralkylsulfonyl or loweralkoxy;

provided that when R_2 is hydrogen or methyl the broken line can indicate only a single bond and R_4 is other than hydroxy.

Re. 32,035

ELECTROMECHANICAL TRANSDUCER CONTROLLING DEVICE

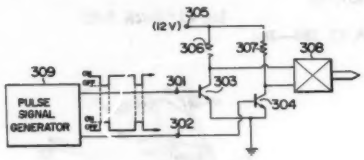
Hiroshi Kuroiwa, and Takao Sasayama, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Original No. 4,366,524, dated Dec. 28, 1982, Ser. No. 152,666, May 23, 1980. Application for reissue Dec. 21, 1983, Ser. No. 563,790

Claims priority, application Japan, Mar. 31, 1977, 52-35253

Int. Cl.[4] F02B *3/00*

U.S. Cl. 361—154 **28 Claims**



13. A control device comprising:

electromagnetic means including an electromagnetic coil and a movable member to be displaced in proportional relation to electric current applied to said electromagnetic coil thereby driving a control means;

an electric source for energizing said electromagnetic coil;

at least one switching means for chopping current supplied from said source to said electromagnetic coil;

means for generating an electrical pulse signal composed of a plurality of pulses for actuating said switching means, each of said pulses having a constant period shorter than a minimum period of time required for said movable member to be moved by its predetermined full stroke and sufficient for said movable member to be moved; and

means for changing the duty cycle of each of said pulses applied to said switching means,

wherein said movable member is displaced in proportional relation to the duty cycle changed by said duty cycle changing means.

PATENTS

GRANTED NOV. 19, 1985

ERRATA

For CLASS	See PATENT NO.
623–014	4,553,271
623–001	4,553,272
623–018	4,553,273
110–223	4,553,285
164–453	4,553,604
29–158R	4,553,690
523–115	4,553,940
514–649	4,554,164

PATENTS

GRANTED NOVEMBER 19, 1985

GENERAL AND MECHANICAL

4,553,269

POCKET STRUCTURE

Daniel Nowak, 720 Canal St., New Orleans, La. 70130

Filed Jul. 27, 1984, Ser. No. 635,083

Int. Cl.[4] A41D *27/20*

U.S. Cl. 2—254 **4 Claims**

1. A pocket structure comprising:

a front panel having a bottom edge and a pocket opening;

a flap to close said pocket opening;

a rear panel;

a first intermediate panel having a bottom edge and a top edge which is above the pocket opening and behind the flap;

a support strip behind the flap and above the pocket opening; and

a second intermediate panel having a top edge secured to said support strip and having side edges distal from the side edges of the other panels and a bottom edge distal from the bottom edges of the other panels.

4,553,270

PROTECTIVE HELMET WITH SECURING COLLAR

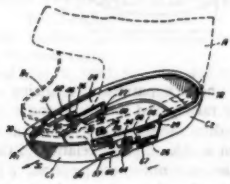
Hanspeter Hoffmann, Postfach 259, FI- 9595 Triesen, Fürstentum, Liechtenstein

Filed Feb. 1, 1983, Ser. No. 462,894

Claims priority, application Switzerland, Apr. 26, 1982, 2542/82

Int. Cl.[4] A42B *3/02*

U.S. Cl. 2—421 **8 Claims**



1. A protective helmet arrangement for protection of the head of the wearer, comprising

an upper part;

a rear lower part being permanently attached to said upper part, said rear lower part having a first engaging member being positioned in such a manner that a substantial portion of the first engaging member is extended beyond said rear lower part, at least one surface of said first engaging member having an engaging area adapted for close engagement with engaging means of the arrangement;

a front lower part, having an inside area which is adapted to face a lower portion of the face of the wearer, said front lower portion having a second engaging member being positioned in a such manner that a substantial portion of the second engaging member is extended beyond said first lower part, at least one surface of said second engaging member having an engaging area adapted for close engagement with the engaging means;

said engaging means being rotatably positioned between said engaging areas of said first and second engaging members, an axis of rotation of said engaging means being permanently positioned within said protective helmet, an outside contour of said engaging means being shaped for close engagement with said engaging areas;

receiving means of said helmet arrangement being adapted to slidably receive said first and second engaging members in assembled condition thereof and to accommodate said axis of rotation of said engaging means; and

locking means being designed to lock said front lower part in a predetermined position thereof relative to said upper part and rear lower part of said helmet arrangement.

4,553,271

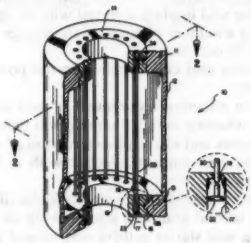
ARTIFICIAL SPHINCTER APPARATUS AND METHOD

Charles D. Baker, Lehi, Utah, assignor to University of Utah Research Institute, Salt Lake City, Utah

Continuation-in-part of Ser. No. 194,528, Oct. 6, 1980, abandoned. This application Apr. 12, 1982, Ser. No. 367,533

Int. Cl.[4] A61F *1/00*

U.S. Cl. 623—14 **15 Claims**



1. An artificial sphincter comprising:

a first ring member and a second ring member rotatably mounted parallel and coaxially with the first ring member and at a predetermined distance from the first ring member;

support means for supporting the first ring member relative to the second ring member;

a plurality of tie members extending between the first ring member and the second ring member so that relative rotation between the ring members causes the tie members to constrict inwardly toward the axis of the first ring member and the second ring member;

actuator means for rotating at least the first ring member relative to the second member; and

a flexible, fluid-impervious membrane means enclosing the artificial sphincter.

12. An artificial sphincter comprising:

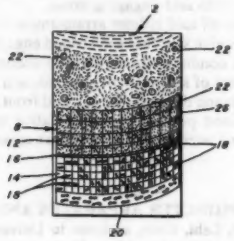
a first split ring member;
a second split ring member;
support means for rotatably mounting the first split ring member coaxially with and parallel to the second split ring member at a fixed, predetermined distance;
a plurality of tie members extending between the first split ring member and the second ring member so that rotation of the first split ring member relative to the second split ring member causes a generally transverse movement of the tie members relative to the axis of the artificial sphincter;
actuator means for rotating the first split ring member; and
a fluid-impervious envelope for the artificial sphincter.

4,553,272

REGENERATION OF LIVING TISSUES BY GROWTH OF ISOLATED CELLS IN POROUS IMPLANT AND PRODUCT THEREOF

Dana C. Mears, Oakmont, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.

Filed Feb. 26, 1981, Ser. No. 238,374
Int. Cl.[4] A61F *1/00*
U.S. Cl. 623—1 **2 Claims**



1. A method of repair of patient tissues by implant comprising
providing a starter cell sample,
providing an implant member having a porous structure,
providing said implant material with an open pore structure having a number of pores of an average pore size of about 25 to 75 microns,
introducing said cell sample into the pores of said implant member,
surgically effecting securement of said implant to said patient, whereby said cell sample will initiate growth within said pores and effect reconstruction of said tissues,
providing said implant member with at least two distinct pore sizes,
providing a first said pore size of about 100 to 400 microns and a second said pore size of about 25 to 75 microns,
culturing said starter cells in said second pores, and
providing a barrier separating said first pores from said second pores.

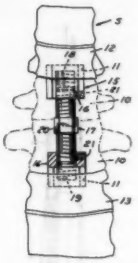
4,553,273

VERTEBRAL BODY PROSTHESIS AND SPINE STABILIZING METHOD

Kent K. Wu, Royal Oak, Mich., assignor to Henry Ford Hospital, Detroit, Mich.

Filed Nov. 23, 1983, Ser. No. 555,362
Int. Cl.[4] A61F *1/24, 1/00, 5/04*
U.S. Cl. 623—18 **8 Claims**

1. The method for stabilizing the spine wherein vertebral bodies have been removed which comprises
forming non-circular recesses in the vertebral bodies which face one another and which have flat bases,
inserting a longitudinally extendable prosthetic device having spaced non-circular blocks having non-circular cross-section conforming to the configurations of the non-circular recesses and flat bases abutting said flat bases of said recesses and extendable means between said blocks between the opposed vertebral bodies with the blocks of the prosthetic device in position for engagement with said recesses,
extending the prosthetic device to the desired predetermined distance to engage each block in its respective recess and locking the prosthetic device in extended position.



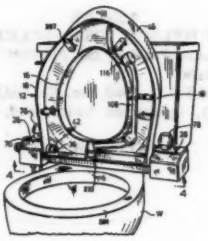
2. A prosthetic device for stabilizing the spine wherein vertebral bodies have been removed which comprises
a pair of non-circular blocks which are bounded by continuously flat bases for engaging non-circular recesses having flat bases in the remaining vertebral bodies which face one another, and
extendable means between said blocks for moving said blocks into engagement with the recesses in the vertebral bodies.

4,553,274

TOILET-BOWL BIDET APPARATUS

George M. Yui, 1543 Knareswood Dr., Mississauga, Canada (L5H 2L9)

Filed Oct. 16, 1984, Ser. No. 661,426
Claims priority, application Canada, Oct. 18, 1983, 439212
Int. Cl.[4] E03D *9/08*
U.S. Cl. 4—420.4 **23 Claims**



1. Toilet-bowl bidet apparatus, comprising a seat which is able to pivot for raising and lowering, and a spray-arm (108) which is mounted on the seat;
where the arm is able to pivot relative to the seat from an in-use position to a not-in-use position;
characterized in that the seat is a plastic moulding (12) of channel-shaped cross-section;
in that the seat comprises a sitting-platform (17) and respective inner (16) and outer (18) side walls which extend downwards from the sitting-platform;
and in that the spray-arm (108) is substantially completely concealed inside the channel-shaped cross-section, and

above the rim (201) of the toilet-bowl (W) when the spray-arm is in the not-in-use position;

and in that the apparatus includes arm-mounting-means for mounting the spray-arm for pivoting relative to the seat (12), where the arm-mounting means includes a bearing portion formed as part of one (18) of the side walls.

4,553,275

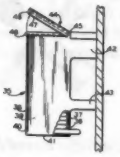
CLEANING CLOTHS AND DISPENSERS THEREFOR

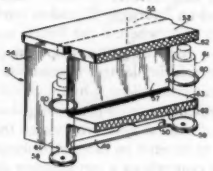
Jerome C. Goldstein, 1400 S. Joyce St., Arlington, Va. 22202

Division of Ser. No. 322,477, Nov. 18, 1981, abandoned. This application May 3, 1984, Ser. No. 606,889

Int. Cl.[4] A47K *3/22*

U.S. Cl. 4—605 **4 Claims**





1. A showerbath room dispenser for dispensing bathing supplies comprising a molded plastic body having rigid front, back, side and bottom walls defining a washcloth chamber and a flexible integrally-formed top wall for washcloth loading access to the chamber, said back wall having a slot formed in its lower portion for dispensing washcloths individually, and means comprising a mounting rib projecting from the lower portion of the backwall and overhanging the dispenser slot for securing the dispenser to a showerbath room wall in spaced relation thereto and also for preventing water flow down the back wall to the dispesner slot.

4,553,276

SECTIONAL MODULAR SHOWER CABINETS AND METHOD AND APPARATUS FOR MAKING AND INSTALLING THEM

Robert C. Paradis, Orillia, Canada, assignor to Fiat Products Incorporated, Monroe, Ohio

Filed Mar. 9, 1983, Ser. No. 473,587

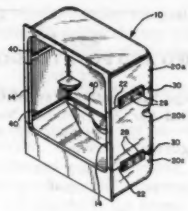
Int. Cl.[4] A47K *3/22*

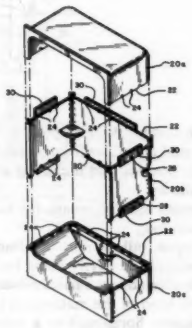
U.S. Cl. 4—612 **11 Claims**

1. A sectional modular shower cabinet comprising:

a plurality of aligned cabinet sections, each having a rear surface and a waterproof front surface, said cabinet sections including a bottom section and at least one upper section, adjacent sections meeting along a junction;

a plurality of joining strips positioned across each said junction, said joining strips adhering to portions of the rear surfaces of each of the adjacent cabinet sections, so that the adjacent cabinet sections are rigidly held in alignment; said joining strips being implemented from the front surface of said cabinet sections by partially removable clamping means; and





a waterproof sealant filling each said junction to make the entire front surface of the cabinet waterproof.

4,553,277

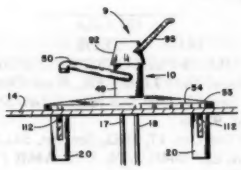
FAUCET AND CLAMPING MECHANISM

Ronnie J. Duncan, 12432 Shore St., Leavenworth, Wash. 98826

Filed Nov. 30, 1983, Ser. No. 556,373

Int. Cl.[4] B25B *5/14*

U.S. Cl. 4—643 **15 Claims**



1. A faucet fixture assembly comprising a housing including a base having a seating side for mounting on the mounting side of a support wall with an opposite clamping side and an opening, control valve means mounted on said housing and having connecting means for connection to a source of fluid under pressure and valve means for controlling the delivery of fluid from said source, clamping means having support means mounted on said housing and projecting from said seating side of said base, clamp arm means mounted on said support means spaced from said base having a disengaged contracted position in which said clamping means passes through the opening when said housing is mounted with the seating side of the base on the mounting side of a support wall and fluid motor means connected to said source of fluid under pressure and operating in response to fluid under pressure to move said clamp arm means from normal disengaged contracted position to engaged

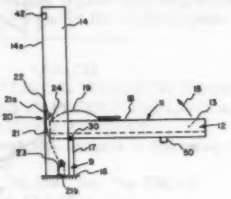
expanded position engaging the clamping side of the support wall to secure said faucet fixture assembly on a support wall.

4,553,278

TIP-UP BED AND POST TENSIONED BEDDING RETAINER

Gerrit K. Drexhage, 910 Centera Way, Mill Valley, Calif. 94941

Filed Apr. 24, 1984, Ser. No. 603,490
Int. Cl.[4] A47C *17/38*
U.S. Cl. 5—136 **9 Claims**



1. In combination a tip-up bed pivotably movable on a first horizontal pivot axis from a horizontal use position to a vertical storage position and including a mattress, bedding and at least one pillow;

recessed storage means for storing said bed in the vertical position;

an open pillow and bedding cavity within said storage means, said cavity being bounded by an outwardly facing flexible concave panel positioned to abut an upper edge of the head of the mattress as the bed and mattress is moved from a horizontal to a vertical position and said upper head edge passes slidingly downwardly along said panel; and

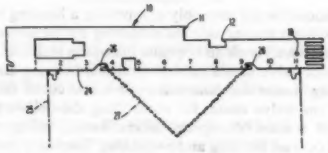
wherein said panel has a radius of curvature greater than the radius of pivot between said first pivot axis and said mattress upper edge and a locus of the center of curvature of said panel is displaced from said first pivot axis such that when said mattress upper edge passes downwardly, said mattress upper edge flexes said panel rearwardly toward a rear portion of said recessed storage means and said panel confining said bedding and pillow in the bedding cavity above said mattress upper edge to securely hold said pillow and bedding against said mattress in the vertical storage position.

4,553,279

MULTI-PURPOSE PAINT STICK

Garry L. Gassew, 1431 Linden La., West Chester, Pa. 19380, and Byron Samaras, 369 San Miguel Dr., Ste. 305, Newport Beach, Calif. 92660

Filed Oct. 17, 1983, Ser. No. 542,266
Int. Cl.[4] B44D *3/06, 3/12;* A46B *17/06*
U.S. Cl. 7—105 **18 Claims**



1. A multi-purpose painting implement comprising:

a. an implement body of predetermined length, width and thickness, said body having spaced-apart hanging means at a predetermined location to hold a filter located on a body side;

b. at least one can-scraping means located on a side of said body for cleaning paint from the insides of various sized cans; and

c. at least one brush-scraping means located at an end of said body for combing particles out of a brush.

4,553,280

WATER HOSE FITTING TOOL

Ramon L. Stright, 8020 Rio Grande Blvd., NW., Albuquerque, N. Mex. 87114

Filed Apr. 20, 1984, Ser. No. 602,574
Int. Cl.[4] B23G *5/20;* B25F *1/00*
U.S. Cl. 7—157 **1 Claim**

1. The combination of a water hose assembly and an implement for effecting repairs on the water hose assembly; wherein the water hose assembly comprises a length of flexible water hose having an exteriorly threaded male coupling disposed on one end, and an interiorly threaded female coupling disposed on the other end, wherein the frmale coupling is further provided with a riselient gasket disposed on an interior surface; and wherein said implement consists of:

a body unit comprising a hub element having a plurality of arm elements radially projecting therefrom, and having an enlarged central aperture formed therein which is dimensioned to receive an elongated torque applying means;

a tap unit comprising a tap member disposed on the end of one of said plurality of arm elements, and having an exterior threaded surface dimensioned to threadingly engage the interior threads of said female coupling;

a die unit disposed on the end of another of said plurality of arm elements, and comprising an enlarged hollow cylindrical die member having an interior threaded surface which is dimensioned to threadedly engage the exterior threads of said male coupling;

an insertion unit disposed on the end of still another of said plurality of arm elements, and comprising an elongated tapered cylindrical member, dimensioned to be received within the cylindrical interiors of the male and female couplings; and

a removal unit disposed on the end of yet another of said plurality of arm elements, wherein said removal unit comprises a generally flattened tapered tang member having an upturned beveled hook portion formed on its free end, whereby the upturned hook portion is dimensioned and configured to engage and effect the removal of said resilient gasket from within the interior of said female hose coupling.

4,553,281

SIDE AND HEEL LASTING MACHINE

Karl F. Vornberger, Amherst, N.H., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed May 21, 1984, Ser. No. 612,481
Int. Cl.[4] A43D *21/00*
U.S. Cl. 12—8.1 **16 Claims**

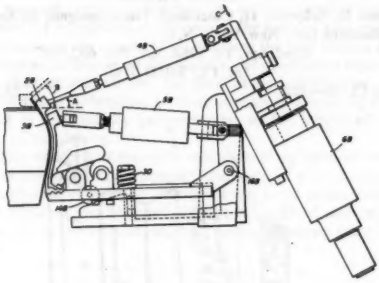
1. A machine, operable on a footwear assembly comprising a last having an insole located at its bottom and an upper mounted thereon with the toe portion of the upper margin wiped against and secured to the insole and unwiped portions of the upper extending heelwardly of the wiped margin portion, which unwiped margin portions extend upwardly at an

open angle to the insole, for applying adhesive in the region between said unwiped margin portions and the corresponding portions of the insole at said region, said machine comprising:

a footwear assembly support for supporting the footwear assembly with the insole directed upwards;

a pair of nozzles spaced upwardly from and facing said insole and mounted for motion toward and away from the insole as well as transverse and longitudinal movement with respect to the insole, said nozzles being operable to apply adhesive into said region;

a lasting tool operable to clamp the upper tightly against the last and to apply light backup pressure against the unwiped margin to support the same, but nevertheless maintaining the open angle between the unwiped margin portions and the insole to permit application of adhesive into said region, said lasting tool comprising two lasting instrumentalities each comprising an inner lasting pad, one inner lasting pad being disposed at each side of the footwear assembly, each lasting pad being made of an elastic, flexible and deformable material, one end of each inner lasting



pad being formed into a plurality of relatively rigid segments;

actuator means to press the rigid segments of the inner lasting pad at each side of the footwear assembly inwardly of the footwear assembly to press the upper tightly against the last and to apply said light backup pressure while maintaining said open angle, which actuator means presents the two inner lasting pads at one level when the adhesive is being applied and, subsequent to application of the adhesive, moves the two lasting instrumentalities to a second level upwardly of said insole while simultaneously moving the relatively rigid segments of the two inner lasting pads inwardly and over the insole in a wiping action to fold the margin onto the insole to press the adhesive between the margin and the insole to adhere the margin onto the insole, part of said actuator means being pivoted during wiping from an orientation at which forces upon the pads are directed at a small acute angle to the footwear assembly bottom to an orientation at which the forces are at a much larger acute angle to the footwear assembly bottom.

4,553,282

MOP HEAD

Douglas R. Batchelor, Chicago, Ill., assignor to Libman Broom Company, Arcola, Ill.

Filed Jan. 15, 1985, Ser. No. 691,744

Int. Cl.[4] A47L *13/258*

U.S. Cl. 15—150 **4 Claims**

1. A mop head comprising:

a hood of polymeric material;

the hood having front and rear spaced apart substantially vertical walls, lateral end walls connected to the front and rear walls, and a top wall connected to the front, rear and end walls;

a handle end-receiving tubular member integral with the hood and extending downwardly below the top wall between the front and rear walls and extending above the top wall;

a mop retaining bar;

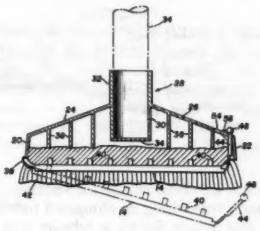
means connecting a first end of the bar to the hood at one end wall;

the second end of the mop retaining bar having a projecting finger, which is bendable, connected thereto;

the finger having an enlarged head at the end;

the hood top wall having a finger end receiving opening adjacent the hood end wall closest to the finger;

the opening in the top wall having first and second adjoining portions in communication with each other and with the first



portion being adjacent the end wall and the second portion inward therefrom;

the opening first portion having a width which permits the finger to move freely therein but which is less than the width of the finger enlarged head; and

the opening second portion having a size to permit passage therethrough of the finger enlarged head;

whereby a mop means can be installed between the bar and the hood bottom and the finger, the finger then locked in place by feeding the finger enlarged head through the opening second portion from beneath the top wall to slightly thereabove and then moving the finger to position it in the opening first portion with the enlarged head bearing on and supported by the top wall along the edge of the opening first portion.

4,553,283

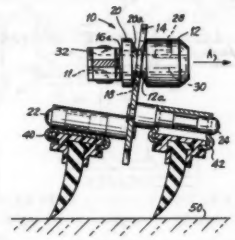
WINDSHIELD WIPER ADAPTER

Peter J. Speth, 239-25 88th Ave., Bellerose, N.Y. 11426

Filed Feb. 26, 1985, Ser. No. 705,772

Int. Cl.[4] B60S *1/28, 1/40*

U.S. Cl. 15—250.32 **4 Claims**



1. An adapter for supporting two wiper blades on a reciprocating windshield wiper drive arm comprising a cross plate having first and second posts extending essentially perpendicular therefrom for independently pivotally supporting said two wiper blades, respectively, said cross plate having an opening

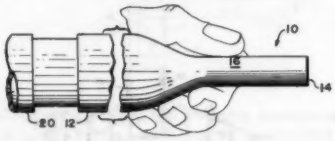
therein intermediate said first and second posts, and a plug member fitted in said opening for rotational and tilting movement for coupling said adapter to said drive arm, said plug member including a gap defined by opposing walls of said plug member, said opening in said cross piece being situated in said gap of said plug member, the configuration of said gap restricting the tilt of said cross plate to insure that the surfaces of said two wiper blades remain on said windshield during reciprocation of said drive arm.

4,553,284

VACUUM CLEANER UNIVERSAL NOZZLE

William P. Strumbos, 85 Middleville Rd., Northport, N.Y. 11768

Filed Mar. 12, 1984, Ser. No. 588,911
Int. Cl.[4] A47L 9/02
U.S. Cl. 15—414 **13 Claims**



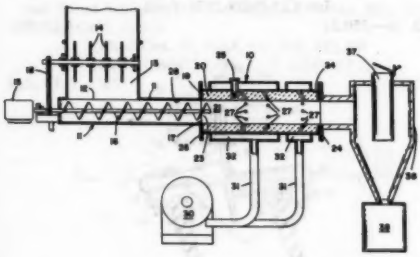
1. A resilient universal nozzle for vacuum cleaning apparatus, said nozzle comprising an elongated tubular element with a coupling end which fits on a tubular pipe means in fluid communication with a source of sub-atmospheric pressure and a body portion terminating in a nozzle inlet end distal from said coupling end, said tubular element having a smooth bore, at least said body portion and nozzle inlet end comprising material which is deformable under manual pressure by the operator and having sufficient resiliency in operation and under suction pressures such that it returns to its original undeformed configuration upon release of said manual pressure, said resiliency preventing the collapse of said nozzle when subjected to material entraining suction pressures in either the deformed or undeformed condition, whereby the size and shape of at least the nozzle inlet end can be altered controllably to suit the operating requirements.

4,553,285

PLUG FURNACE

Kerry M. Sachs, 49 S. Huntington Ave. 104, Boston, Mass. 02130, and David W. Roberts, 814 J St., Davis, Calif. 95616

Filed Jul. 18, 1984, Ser. No. 632,027
Int. Cl.[4] F23G 5/02
U.S. Cl. 110—223 **5 Claims**



1. A plug flow furnace comprising:

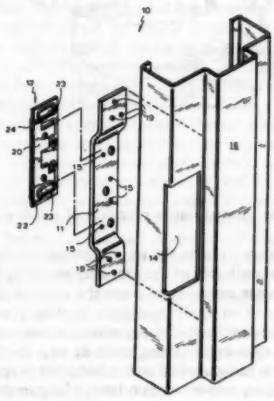
tubular conveying means having an opening to receive particulate fuel and an urging means to force said particulate fuel through said tubular conveying means toward a conveying means outlet, a tubular furnace having a diameter not greater than about the diameter of said conveying means outlet and a lining of refractory material having a higher coefficient of friction with respect to said particulate fuel than said conveying means and forming a compacting means for forming said fuel into a plug, said furnace connected to said conveying means outlet to be coaxial with said conveying means to form a flow path from said conveying means inlet to an outlet from said furnace, and air jets located in the sides of said furnace, and said compacting means located in said flow path between said opening to said tubular conveying means and said air jets for forming said particulate fuel into a plug.

4,553,286

HINGE PREPARATION ASSEMBLY FOR A STEEL DOOR FRAME

Ernest D. Schwarz, II, Cincinnati, Ohio, assignor to American Standard Inc., New York, N.Y.

Filed Apr. 19, 1984, Ser. No. 602,029
Int. Cl.[4] E05D 5/00
U.S. Cl. 16—382 **13 Claims**



1. A hinge preparation assembly capable of mounting a leaf of a standard weight hinge set or a heavy weight hinge set thereto without requiring changing the depth of each cutout section of a steel member, said hinge preparation assembly comprising:

a hinge reinforcement member mounted to said each hinge cutout section of said steel member, said each cutout section having a depth equal to the thickness of a heavy weight hinge leaf, said hinge reinforcement member having a plurality of spaced apart openings, including spaced apart threaded openings corresponding to the openings of said hinge leaf;

a hinge conversion means, formed in the shape of a unitary member, is mounted to said hinge reinforcement member and has a thickness which is substantially equal to the difference between that of the standard weight hinge leaf and the heavy weight hinge leaf; and

said unitary member including frangible means so that upon its removal from said hinge reinforcement member, said hinge preparation assembly converts from a standard weight hinge leaf preparation to that of a heavy weight hinge leaf preparation.

4,553,287

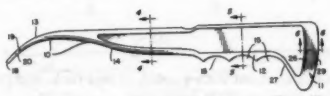
DEVICE AND PROCESS FOR CLEANING SHRIMP AND THE LIKE

Marlette S. DeSordi; Pete DeSordi, III, both of 1100 N. Trenton, Ruston, La. 71270; Jan C. McCullin, and Sidney G. McCullin, both of Rte. 2, Dubach, La. 71235

Filed Jun. 23, 1983, Ser. No. 506,904

Int. Cl.[4] A22C *29/02*

U.S. Cl. 17—48 4 Claims



4. A process for cleaning crustanceans having slender, elongated bodies comprising the steps of

grasping a device that comprises an elongated body having a tapered portion at one end, a deheading portion at another end and a handle adjacent said deheading portion, wherein said tapered portion comprises an arcuate section and is adapted for lengthwise insertion into the body of said crustacean through the channel that contains the said vein of said crustacean to thus sever the body of the crustacean adjacent said channel and rupture the shell of said crustacean, and wherein said deheading portion comprises a cutting edge which is substantially perpendicular to the length of said body of the device,

deheading said crustacean with said deheading portion, and

inserting said tapered portion into the body of said crustacean through said channel to thus sever the body of the crustacean adjacent said channel, rupture the shell of said crustacean and removed said body of said crustacean from said shell.

4,553,288

CARD CLOTHING FOR CARDING SEGMENTS OF A CARDING MACHINE

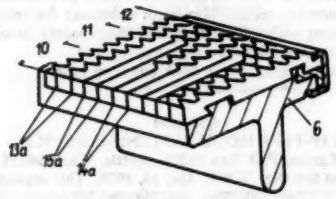
Manfred Schneider, Karl-Marx-Stadt; Gerhard Barth, Dittersdorf; Johannes Barth, Niederwiesa, and Wolfgang Neubert, Karl-Marx-Stadt, all of German Democratic Rep., assignors to Veb Kombinat Textima, Karl-Marx-Stadt, German Democratic Rep.

Continuation-in-part of Ser. No. 566,818, Dec. 28, 1983,. This application May 25, 1984, Ser. No. 614,724

Claims priority, application German Democratic Rep., Dec. 30, 1982, 246803

Int. Cl.[4] D01G *15/88*

U.S. Cl. 19—113 9 Claims



1. A card clothing for carding segments of a carding machine, particularly flat carding machine, in which carding segments are stationarily or movably arranged against a circumference of a respective rotary drum having a card clothing on its circumference, the card clothing for the carding segments comprising a plurality of non-uniformly arranged tips cooperating with the card clothing of the respective drum, said tips being arranged in groups, said groups being arranged in at least two rows lying one after another in a direction of carding and each extending transversally to the direction of carding, each group being comprised of two to six tips located one after another and having a predetermined width, the groups in a first row, as viewed in the direction of carding, being laterally spaced from each other a distance which corresponds to at least three widths of one group of the tips, said groups each having an extension in the direction of carding corresponding to at least two widths of the groups, and the groups of a following row, as viewed in the direction of carding, being laterally offset relative to the groups of a previous row at least a distance corresponding to the width of one group.

4,553,289

APPARATUS FOR PRODUCING A WIDE FIBROUS WEB

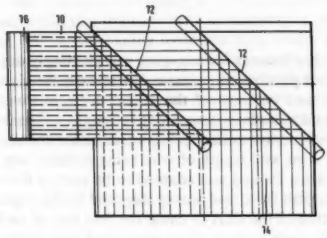
Otto Strobl, Birkenhof 23, D-2820 Bremen 70; Harry Blien, Pfortmüller Str. 58, D-6718 Grünstadt, and Wolfgang Uliczka, Landwehrstr. 36, D-2822 Schwanewede, all of Fed. Rep. of Germany

Filed Nov. 18, 1983, Ser. No. 553,248

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1982, 3242539

Int. Cl.[4] D04H *11/04*

U.S. Cl. 19—161.1 7 Claims



1. An apparatus for producing a web whose width exceeds a working width of a web portion being produced by a machine, particularly cards, carding machines and pneumatic web formers, said machine having a number of take-off units arranged in a stack and discharging the web portions in a first direction, said apparatus having a conveyor table for conveying the web in a second direction at a first angle from the first direction, each of the take-off units having a deflector extending at one-half of the first angle to both the first and second directions, said deflectors being positioned along the first direction at a spacing from each other equal to a width of the web portion so that the web portions are deflected into the second direction and placed side-by-side with edges contact on the conveyor table.

4,553,290

APRON FOR A DRAFT APPARATUS

Hisaaki Kato, Shiga, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

Filed Feb. 8, 1984, Ser. No. 577,966

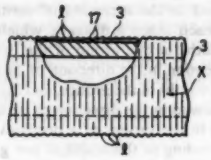
Claims priority, application Japan, Feb. 14, 1983, 58-22531

Int. Cl.[4] D01H *5/86*

U.S. Cl. 19—244 6 Claims

1. An apron for a draft apparatus comprising a front side rubber layer, a reverse side rubber layer adhered to said front

side rubber layer, and core cords interposed between said front and reverse side rubber layers, wherein the ratio of thickness of



said front side rubber layer to the thickness of said reverse side rubber layer is within a range from 3:7 to 1:9.

4,553,291

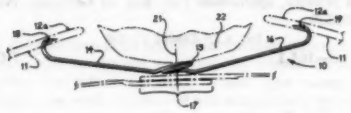
COLLAR FASTENER

Clarence W. Carey, 518 Cresta Vista La., Portola, Calif. 94025

Filed Aug. 27, 1984, Ser. No. 644,357

Int. Cl.⁴ A41D *25/12*

U.S. Cl. 24—55 **1 Claim**



1. A collar fastener for engaging and yieldingly drawing the tapered end portions of a shirt collar toward the shirt front to cause the end portions of the collar to be retained in such position, said fastener comprising a length of resilient wire formed to include a coiled spring intermediate the ends of said length of wire, said length of wire being divided into a pair of elongate arms formed and adapted to be sprung forwardly as viewed in plan from said spring disposed in the region of the collar button of the shirt to cause the free end of each arm to engage the back surface of an associated end portion of the shirt collar, means carried on the free end of each said arm for engaging the back of an associated tapered end portion of the collar to draw the tapered end portions of the collar back toward the shirt front, said means including sharpened points formed on the tips of said arms, the ends of said arms being curled forwardly sufficiently to dispose said tips in substantially confronting relation to each other to permit said tips to enter the back of the collar parallel to the front surface of the collar whereby the tips penetrate only through the back of the collar, said tips lying in a plane substantially parallel to the axis of said coiled spring portion.

4,553,292

RAPID ATTACHMENT DEVICE FOR SKI BOOTS

Serge Pradier, Alby-sur-Cheran, and Jean-Louis de Marchi, Duingt, both of France, assignors to Etablissements Francois Salomon et Fils, Annecy, France

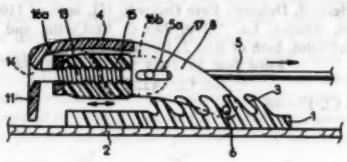
Filed Mar. 14, 1984, Ser. No. 589,361

Claims priority, application France, Mar. 30, 1983, 83 05212

Int. Cl.⁴ A43B *5/04*

U.S. Cl. 24—70 SK **6 Claims**

1. Rapid attachment device for a ski boot, of the toggle type, with adjustable tightening force, comprising a series of notches (3) constituting a rack (1) fixed to an element to be tightened, and a tightening lever (4) permanently connected by a traction element (5) to a second element to be tightened, said lever comprising a hooking finger (6) for engaging one of said series of notches, depending on the desired degree of tightness, and constituting an articulation axis of said lever, said lever having an element (15) thereon the position of which is longitudinally adjustable in a continuous manner while said hooking finger (6)



remains in engagement with a notch of said rack, and on which said traction element (5) is supported.

4,553,293

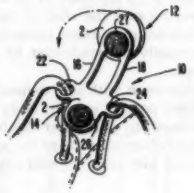
REUSABLE TYING DEVICE

Ronald D. Blum, Roanoke, Va., assignor to Tie-Tite Products, Incorporated, Roanoke, Va.

Filed Oct. 4, 1983, Ser. No. 538,949

Int. Cl.⁴ A43B *11/00*; F16G *11/00*

U.S. Cl. 24—119 **5 Claims**



1. A device for securing tied shoelaces comprising:

(a) a body portion;

(b) a securing member extending from said body portion, said member including means for securing said device to shoelaces;

(c) said body portion and said securing member being connected by spaced flexible connector members of sufficient dimensions to extend over a shoelace knot and impede the knot from untying;

(d) said connector members include two spaced elastic band members spaced to engage the knot from opposing sides while exposing the knot for view;

(e) said device including a rear face and a front face, said rear face of said securing member having first portion of a separable fastener, and said rear face of said body portion having a complementary second portion of a fastener for releasable engagement with said first portion to releasably fasten said body portion to said securing member; and

(f) said fastener being of the hook and loop type.

4,553,294

CLIP-TYPE HOOK FASTENING DEVICE

Walter L. Larsen, P.O. Box 18302, Seattle, Wash. 98118

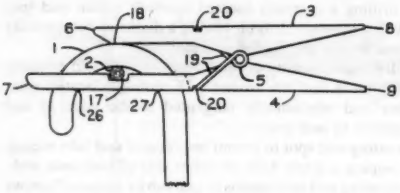
Division of Ser. No. 28,850, Apr. 10, 1979,. This application Mar. 20, 1981, Ser. No. 246,067

Int. Cl.⁴ A41D *27/22*; A44B *13/02*

U.S. Cl. 24—489 **57 Claims**

1. A fastening device for fastening a hook to a generally linear member, to which the hook is hooked, comprising two primary members which are connected together to form a generally lever-type clip which permits generally hinged-type angular relative movement between the primary members; a pair of jaws, one jaw being so combined with each primary member that the two jaws are generally openable with respect to each other as a function of the generally angular relative

movement between the primary members, one jaw having a generally slot shaped opening of sufficient width and extending a sufficient distance into the jaw to accomodate at least part of the hook when said fastening device is in its fastening position with respect to the hook and the linear member, the other jaw being without a primarily radially oriented generally slot shaped opening of sufficient size to accomodate the hook; means for biasing the jaws toward a generally closed position; and means, involving the shape of the jaws and their position



with respect to the primary members, for clasping the hook and the linear member in their hooked-together position with the linear member passing transversely through the jaw region of the fastening device; whereby the fastening device can be put into a fastening position with respect to the hook and the linear member such that said slotted jaw accomodates the hook within its slot shaped opening and the jaws conjointly clasp the hook and the linear member, thereby constraining them to their hooked-together position.

4,553,295

MECHANISM FOR LATHE-WORKING ARTICLES

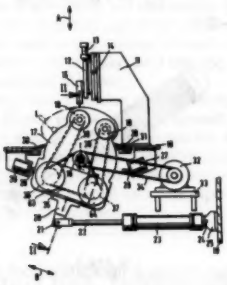
Hermann Dietrich, Ludwigshafen, Fed. Rep. of Germany, assignor to Ingenieurburo, Hermann Dietrich, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 20, 1984, Ser. No. 602,433

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1983, 3314758

Int. Cl.[4] B21D *51/54*

U.S. Cl. 29—1.32 **14 Claims**



1. Apparatus for manufacture of articles comprising a housing rotatably mounted on a shaft for rotation about an axis, at least two rotatable spindles mounted on said housing for rotation about respective axes, each of said spindles being adapted to hold one of said articles, and actuating means for controlling the rotational position of said housing about said shaft to locate a first of said spindles in a working position for one rotational position of said housing and a second of said spindles in said working position for another rotational position of said housing, wherein said actuating means comprises a piston-cylinder arrangement having one end pivotally attached to said housing and which positions said housing in discrete steps around said shaft.

4,553,296

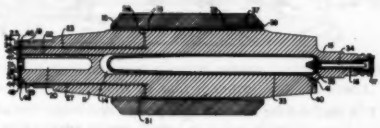
SELF-CONTAINED INFLATABLE CROWN ROLL

Werner W. Eibe, Pittsburgh, Pa., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jun. 9, 1983, Ser. No. 502,873

Int. Cl.[4] B21B *31/00*

U.S. Cl. 29—113 R **8 Claims**



1. In an inflatable crown roll having a circumferential cavity beneath its working face for receiving a fluid under pressure so as to crown said working face, a fitting in an end of the roll for detachably connecting a high pressure fluid pump therewith, and conduit means within the roll extending between said cavity and said fitting and including a valve operable from the end of said roll, the improvement comprising a reservoir within said roll for containing hydraulic fluid under pressure connected with said cavity by said valve positioned therebetween, the pressure in the reservoir being higher than the pressure in the cavity whereby the pressure in the cavity may be selectively increased from the reservoir by opening of said valve without connection to an external pressure source.

4,553,297

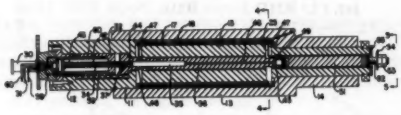
HYDRO-MECHANICAL INFLATABLE CROWN ROLL

Werner W. Eibe, Pittsburgh, Pa., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Mar. 29, 1984, Ser. No. 594,798

Int. Cl.[4] B21B *13/02*

U.S. Cl. 29—113 AD **11 Claims**



1. A hydro-mechanical inflatable crown rolling mill roll comprising an arbor, a cylindrical shell thereon, an annular cavity between said arbor and said shell, means carried by said arbor for introducing hydraulic fluid under pressure into said cavity to crown said shell, mechanical means positioned in said cavity and movable radially outwardly to increase and decrease the effective diameter of said mechanical means, and actuating means carried by said arbor effective to shift said mechanical means after inflation of the sleeve to an extent sufficient to provide clearance between the mechanical means and the shell, whereby the crown and the stiffness of the roll are varied by adjusting said hydraulic pressure and the radial position of said mechanical means.

4,553,298

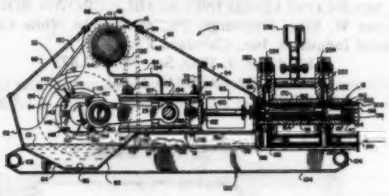
METHOD FOR FABRICATING A RECIPROCATING PISTON PUMP

William A. Grable, Box O, Wayne, Okla. 73095

Division of Ser. No. 376,698, May 10, 1982, Pat. No. 4,477,237. This application Jul. 25, 1984, Ser. No. 634,357

Int. Cl.[4] B23P *15/00*

U.S. Cl. 29—156.4 R **6 Claims**



1. A method for fabricating a power end frame for a reciprocating piston pump wherein said frame is adapted to support spaced apart bearing means for at least a rotatable eccentric shaft, said method comprising:

providing a fixture including spaced apart support members for locating and supporting a plurality of metal plate members comprising bearing support means of said frame, said fixture further including means for supporting a shaft for locating at least two spaced apart tubular bearing support sleeves in alignment with each other and for being secured to said plate members;

cutting said plurality of plate members to a predetermined shape including openings for receiving said bearing sleeves;

machining said bearing sleeves to a predetermined bore diameter for receiving respective bearings assemblies;

placing said plate members in said fixture and aligning said plate members with respect to each other;

positioning said bearing sleeves in said openings in said plate members and supporting said bearing sleeves with said shaft; and

welding said plate members and said bearing sleeves to each other along contiguous surfaces to form said frame.

4,553,299

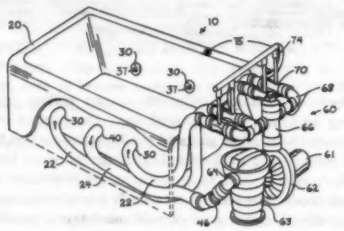
METHOD FOR INSTALLING A WHIRLPOOL BATH ON AN IN-PLACE BATHTUB

Thomas P. Ebert, 1611 Sheffield Ct., Elgin, Ill. 60120

Division of Ser. No. 291,818, Aug. 10, 1981, Pat. No. 4,419,775. This application Aug. 12, 1983, Ser. No. 522,531

Int. Cl.[4] B21D *53/00*; **B21K** *29/00*; **B23P** *15/26*

U.S. Cl. 29—157 R **2 Claims**



1. In a method for installing a whirlpool assembly in a previously installed porcelain tub wherein said tub has an inner wall and an outer wall, the improvement comprising:

(a) providing a pump assembly, at least one flexible inlet pipe, at least one flexible outlet pipe, at least one inlet means, and at least on outlet means;

(b) providing a mounting flange on said inlet means and said outlet means;

(c) securing said flexible inlet pipe to said inlet means, and said flexible outlet pipe to said outlet means;

(d) using said inlet means to mark at least one spot for forming an insert in said tub;

(e) cutting said spot to permit insertion of said inlet means, wherein said cutting is for a porcelain tub, and cutting said spot for said inlet means and said outlet means includes:

(1) drilling a centrally located aperture within said spot with a masonry drill bit having a diameter substantially smaller that the diameter of said spot;

(2) drilling a plurality of small recesses with said masonry drill bit in said tub around said centrally located aperture and substantially tangential to the edge of and interior to said spot;

(3) cutting said spot to permit insertion of said inlet means;

(4) tapping a screw hole on either side of said spot; and

(5) securing said inlet means in said tub by means of screws through said flange into said screw hole;

(f) passing said pipe between said inner wall and said outer wall to said pump assembly, and securing said inlet pipe to said pump assembly;

(g) installing said outlet means in a fashion similar to said inlet means; and

(h) securing an end of said outlet means in an operative fashion to said pump assembly.

4,553,300

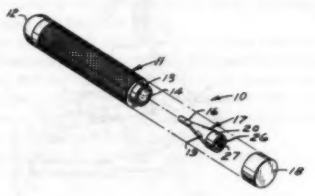
POCKET "E"-RING INSTALLATION TOOL

Clayton S. Mancha, 1445 N. Burke, Visalia, Calif. 93291

Filed May 29, 1984, Ser. No. 614,808

Int. Cl.[4] B23P *19/00*

U.S. Cl. 29—235 **1 Claim**

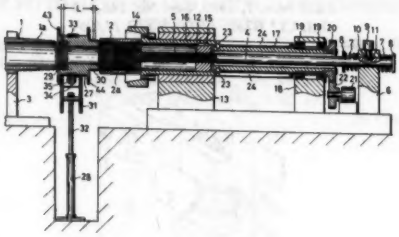


1. A pocket "E"-ring installation tool for injector pump rotor assemblies, comprising, in combination, a cylindrical main body having a rounded first end, a knurled side around said main body, a narrowed neck at an opposite second end, a central opening in said second end having a narrow counterbore within an inward end, a guide pin stored in said opening and in said counterbore, a removable cap fitted on said neck; said guide pin comprising a cylindrical main portion fitted within said opening, a shank portion fitted in said counterbore and a conically tapering portion flush therebetween, a recessed opening in an end of said guide pin main portion and a central projection within said recessed opening, an outward end of said projection being flush with an end face of said main portion.

4,553,301
THREADEDLY FIXING APPARATUS

Seiji Hattori, Nagoya, Japan, assignor to Daidotokushuko Kabushikikaisha, Japan

Filed May 4, 1984, Ser. No. 607,059
Claims priority, application Japan, May 4, 1983, 58-78755; Dec. 29, 1983, 58-248258
Int. Cl.⁴ B23P *19/00*
U.S. Cl. 29—237 5 Claims



1. A threaded fixing apparatus including:
(a) a retaining means for retaining a first member having a buttress tapered thread portion;
(b) a retaining means for retaining a second member having a tapered thread portion to be threadedly fitted into the tapered thread portion of said first member;
(c) a gauge having a detecting thread portion threadedly fitted into the tapered thread portion of said first member to detect a helical locus position thereof and a further detecting threaded portion threadedly fitted into the tapered thread portion of said second member to detect a helical locus position thereof; and
(d) a means for relatively turning said first and second members to threadedly mount the tapered thread portions of both the members together in the state wherein the helical locus positions of both the thread portions coincide on the basis of the helical locus positions of said both tapered thread portions detected by said gauge;
(e) said detecting thread portion to be threadedly fitted into the tapered thread portion of said first member being formed such that it may be threadedly fitted into the tapered thread portion of said first member more readily than the case where the tapered thread portion of said second member is threadedly fitted into the tapered thread portion of said first member;
(f) said detecting thread portion to be threadedly fitted onto the tapered thread portion of said second member being formed such that it may be threadedly fitted onto the tapered portion of said second member more readily than the case where the tapered thread portion of said first member is threadedly fitted onto the tapered thread portion of said second member.

4,553,302
INSTALLATION TOOL, TANGLESS HELICALLY COILED INSERT

Frank J. Cosenza, San Pedro, and Albert K. Yamamoto, Huntington Beach, both of Calif., assignors to Rexnord Inc., Brookfield, Wis.

Filed Feb. 21, 1984, Ser. No. 581,837
Int. Cl.⁴ B23P *19/04*
U.S. Cl. 29—240.5 4 Claims

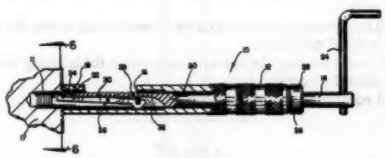
1. A tool for inserting a tangless helically coiled insert in a tapped hole, the helically coiled insert having at least one free end with a recess in the inner thread of the free end, said tool comprising:
a tubular body of substantially circular cross-section, said body including a portion at one end thereof having an aperture therein adapted to receive a tangless helically coiled insert;
a mandrel insertable into said tubular body and adapted to receive the tangless insert for installation in the tapped hole, said mandrel having a portion with a cavity therein and further including,
driving means at one end for applying a torque sufficient to install the insert in a tapped hole,
a threaded portion at an end opposite said driving means and adjacent said body aperture for threading the tangless helically coiled insert thereupon, and

means for engaging said mandrel within the insert for simultaneous movement of said mandrel and the insert, said means including a pivotable pawl having a laterally projecting hook means biased in a first direction and extending longitudinally in said mandrel cavity adjacent said mandrel threaded portion, said pawl having a free end with laterally projecting means thereon for automatically locating said pawl within the insert at the insert recess as said mandrel is rotated in a clockwise direction, with said pawl locating means disengaging automatically form the insert when said mandrel is rotated in a counterclockwise direction, with said pawl free end moving in a direction opposite said first biased direction as a result thereof.

4,553,303
REMOVAL TOOL FOR TANGLESS, HELICALLY COILED INSERT

Albert K. Yamamoto, Huntington Beach, Calif., assignor to Rexnord Inc., Brookfield, Wis.

Filed Feb. 21, 1984, Ser. No. 581,838
Int. Cl.⁴ B23P *19/04*
U.S. Cl. 29—240.5 3 Claims



1. An extraction tool for removing an installed tangless, helically coiled insert having a recess in the inner thread of the first coil at each end, from a tapped hole, said tool comprising:
a tubular body of substantially circular cross-section having a longitudinal bore therethrough;
a mandrel insertable in said tubular body and constructed and arranged to move axially and rotatably in said bore, said mandrel having driving means at one end for moving said mandrel axially and rotatably, a threaded portion at an end opposite said driving means, and a longitudinal cutout at said opposite end; and
a pivotable pawl arranged in said longitudinal cut-out, said pivotable pawl having a laterally projecting hook means adjacent said opposite end of said mandrel for engaging a recess at the trailing end of the insert, said insert recess engaging means being located on the counterclockwise side of the longitudinal centerline of said pivotable pawl, and ramp means, adjacent said recess engaging means and on the clockwise side of the longitudinal centerline of said pivotable pawl, for pivoting the lead end of said pivotable

pawl inwardly upon contact with the trailing end of the insert,

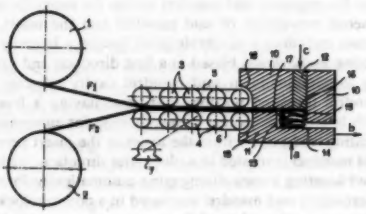
said mandrel further including means for biasing said pawl in a first upward direction, with said biasing means and said pawl being constructed and arranged such that said recess engaging means automatically engages the insert recess when said pawl is inserted into the insert by rotation of said mandrel.

4,553,304

METHOD FOR THE PRODUCTION OF A MULTILAYERED CAPACITOR BLOCK

Daniel Fleuret, Bagnolet, France, assignor to Thomson CSF, Paris, France

Filed May 31, 1983, Ser. No. 499,398
Claims priority, application France, Jun. 4, 1982, 82 09732
Int. Cl.⁴ H01G *4/26*
U.S. Cl. 29—25.42 **12 Claims**



1. A method for the production of a multilayer capacitor block comprising the steps of:

(a) unwinding the feeding, into a cavity, at least one metallized film which forms a succession of alternately insulating and conductive layers comprising laterally offset metallisations;

(b) at least partially filling the cavity with said film, under at least the action of gravity, in such a manner so as to form a stack comprising successive folds along a longitudinal direction and in contact with two sides of the cavity situated in a first lateral direction, the lateral edges of the said metalized film being situated in a second lateral direction;

(c) compressing the stacked successive folds along the longitudinal direction;

(d) compressing the stacked successive folds along the first lateral direction; and

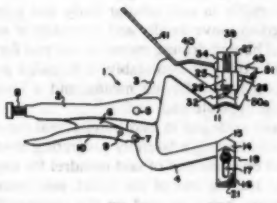
(e) equipping the block with electrical connections.

4,553,305

PIPEFITTER'S SCRIBING AND SPACING TOOL

Timothy C. Dearman, P.O. Box 937, Pearland, Tex. 77588

Filed Nov. 23, 1983, Ser. No. 554,570
Int. Cl.⁴ B23Q *3/18*
U.S. Cl. 29—272 **27 Claims**



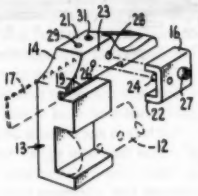
21. A pipefitter's tool adapted for use in joining a pipe and a fitting, said tool comprising clamp means having a pair of jaws movable toward and away from one another for clamping and unclamping a pipe; first scribe means; second scribe means; means mounting each of said scribe means in spaced apart relation for movements toward and away from a pipe clamped between said jaws; means coupling said scribe means to one another for conjoint movement and operationg means connected to said scribe means for effecting movement of the latter.

4,553,306

RECIPROCATING SAW OFFSET BLADE HOLDER

Paul S. Mineck, 2953 Harrison St., San Francisco, Calif. 94110

Filed Nov. 7, 1983, Ser. No. 548,942
Int. Cl.⁴ B23P *17/00*; B27B *11/06*
U.S. Cl. 29—401.1 **3 Claims**



1. In a hand held power drive saw unit having a reciprocating drive member and an adapter unit mountable on said drive member and having an offset portion extending laterally from the drive member and providing a U-shaped clip attachable to said offset portion by a machine screw and formed for securing the end of a saw blade to said offset portion with the saw blade substantially flat with the upper surface of the saw unit, the improvement comprising

forming a groove in a side of said offset portion extending longitudinally of the drive member and adapter to receive one leg of said clip with said clip holding said saw blade against said side of said offset portion and with the teeth of said saw blade aligned with and projecting upwardly past the upper surface of the hand held power drive saw unit whereby said saw blade may be used to make "flush to" cuts,

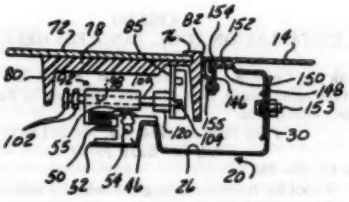
and drilling and tapping an opening in said side of said offset portion for threadably receiving said machine screw when said saw blade is in position for said "flush to" cuts.

4,553,307

METHOD FOR INSTALLING A SLIDING ROOF PANEL ASSEMBLY

Milton C. Kaltz, Allen Park; David C. Garascia, Novi, and Michael E. Kilpinen, Northville, all of Mich., assignors to ASC Incorporated, Southgate, Mich.

Filed Jan. 17, 1984, Ser. No. 571,561
Int. Cl.⁴ B23P *11/00*
U.S. Cl. 29—434 **2 Claims**



1. A method for installing a sliding roof panel movably mounted on a housing on the stationary sliding roof structure of a vehicle having an opening in the sliding roof thereof

which is opened and closed by the sliding roof panel comprising the steps of:

fixedly attaching a reinforcement ring having a central aperture with a shape complimentary to the shape of the roof opening to a roof opening defining portion of the housing; and

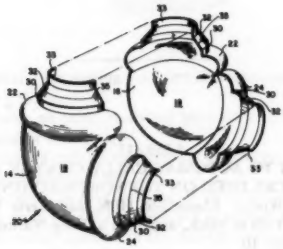
then assembling and fixedly attaching the reinforcement ring from inside the vehicle to the edges of the vehicle roof structure bounding the roof opening.

4,553,308

PIPE FITTING COVER AND METHOD FOR COVERING PIPE FITTINGS

Chris J. Botsolas, St. Petersburg, Fla., assignor to Carol Bostolas, St. Petersburg, Fla.

Filed Sep. 26, 1983, Ser. No. 535,911
Int. Cl.[4] B23P *11/02*; F16L *9/00, 9/14*
U.S. Cl. 29—450 **20 Claims**



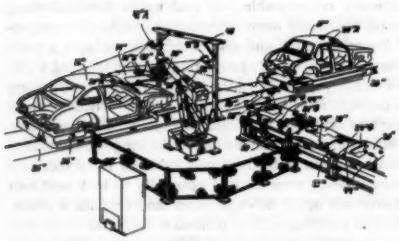
1. A pipe fitting cover for a flanged pipe fitting comprising a resilient body member having a body portion fored to generally conform to the shape of the pipe fitting to be covered and a toroidal protrusion portion unitary with the body portion and extending outwardly from the cover body portion at the location in alignment with each flange on the pipe fitting to be covered each said toroidal protrusion being discrete from any other toroidal protrusion on said pipe fitting cover whereby, each said toroidal protrusion portion can overlap a similarly configured toroidal protrusion portion on an adjacent pipe fitting cover.

4,553,309

ROBOTIC ASSEMBLY OF VEHICLE HEADLINERS

Edward C. Hess, Farmington Hills, and Edward Trevino, Harrison Twp., Macomb County, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 26, 1984, Ser. No. 654,567
Int. Cl.[4] B67B *7/24*
U.S. Cl. 29—450 **2 Claims**



1. A method of using a robot to install a headliner in a vehicle body on an assembly line wherein both the configuration of the vehicle body and the material and/or color as well as the configuration of the headliner vary and are combined at an assembly station comprising the steps of:

forming all the various vehicle bodies and headliners with common sunshade accommodating holes,

providing an arm of the robot with a fixture having locators corresponding to the sunshade accommodating holes in the vehicle bodies and headliners,

sequentially conveying the vehicle bodies relative to the robot,

coordinating and sequentially conveying the headliners relative to the robot so as to correspond in a prescribed matchup with the vehicles bodies approaching the robot,

having the robot arm pick up, support and hold a preselected headliner by the fixture locators engaging in the sunshade accommodating holes in the headliner,

having the robot arm with the headliner supported thereon enter a preselected headlinerless vehicle body through its windshield opening and extend beneath its ceiling,

having the robot arm with the headliner supported thereon locate and also engage the fixture locators in the sunshade accommodating holes in the vehicle body, and

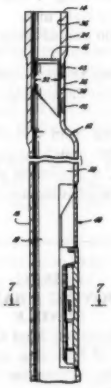
having the robot arm move the supported and located headliner thereon into position against the vehicle body ceiling for affixing thereto.

4,553,310

INTEGRALLY FORMED SIDEPOCKET MANDREL

Francis D. Logan, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Feb. 27, 1984, Ser. No. 584,048
Int. Cl.[4] B23P *11/00*
U.S. Cl. 29—517 **22 Claims**



1. The method of making an integral metal sidepocket mandrel having a one-piece body having a main bore and an offset bore and ends and a metal orienting sleeve without requiring the ends to be made separately and circumferentially welded comprising,

forming and shaping both ends of a one-piece tubular metal stock by reducing the ends while leaving a middle section unreduced whereby the middle section forms a main bore and an offset bore, said ends being formed into tubular shapes and being aligned with and forming part of the main bore, at least one of the ends having an internal diameter large enough to receive an orienting sleeve,

moving an orienting sleeve into the main bore through one

of the ends and securing said sleeve in the main bore spaced from one of the ends, and

reforming said one end for reducing the internal diameter of said one end to a diameter less than the outside diameter of the sleeve for providing material to form a premium thread thereon.

4,553,311

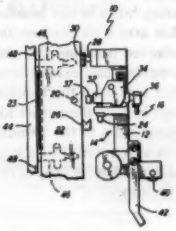
CHUCK HANDLING DEVICE

Louis J. Medico, Wilton, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Dec. 22, 1983, Ser. No. 564,266

Int. Cl.⁴ B23Q *7/00*; B25B *11/00*; B65G *15/64*

U.S. Cl. 29—559 **7 Claims**



1. In a microlithography system, a method of applying and holding a wafer chuck assembly against an X, Y, θ alignment plate comprising the steps of:

latching a wafer chuck assembly with a chuck handling device while inserting alignment pins carried by the device into corresponding V-like grooves in said chuck assembly to form a rigid unit;

mounting said unit on pins extending from an X, Y, θ alignment plate;

releasing said latching to allow said chuck assembly to fall downwardly a short distance until it rests on said X, Y, θ pins; and

extending two pistons from said chuck handling device to engage said wafer chuck assembly to urge it snugly against said X, Y, θ alignment plate until said chuck assembly and alignment plate are locked together by vacuum means.

4,553,312

DEVICE FOR REMOVING A BAND FROM A SHEET BUNDLE

Wilhelm Mitzel, Neu-Keferloh; Josef Geier, and Karl Leuthold, both of Munich, all of Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH, Fed. Rep. of Germany

Filed Aug. 5, 1983, Ser. No. 520,714

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1982, 3229765

Int. Cl.⁴ B23D *15/04*

U.S. Cl. 29—564.3 **16 Claims**

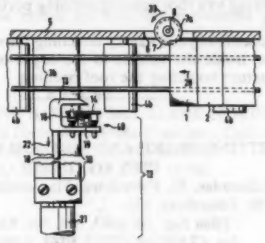
1. A device for removing a band from a bundle of stacked sheets having edges defining opposite side faces of the bundle, the device comprising:

a transport device operable to transport the bundle of sheets past a band-removing device;

a cutting device having a cutting element arranged in a plane parallel to said sheets, the cutting device intersecting one of the side faces and extending into the bundle between the sheets as the bundle is transported; and,

a pull-off device for removing the band when severed;

whereby the cutting element cuts throughout the entire length of the bundle, severing the band wherever disposed



along the side face of the bundle, without damage to the sheets.

4,553,313

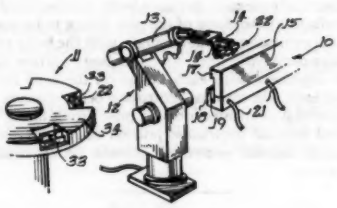
SYSTEM TO AUTOMATICALLY CHANGE TOOL BLOCKS USED ON TURNING MACHINES

Rudolph R. Winter, Bloomfield Hills, and Verle V. Propst, Rochester, both of Mich., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 23, 1982, Ser. No. 452,539

Int. Cl.⁴ B23Q *3/157*

U.S. Cl. 29—568 **7 Claims**



1. A quick change tool block system for use on various types of turning machines, comprising a tool block holder mounted on a turning machine and a generally rectangular tool block adapted to be shifted between said holder and a set-up fixture, means to shift said tool block between said fixture and holder, said holder including a body member having a pair of oppositely disposed parallel horizontal dovetail recesses and a vertical key extending from the upper dovetail, said lower dovetail being vertically reciprocable and said upper dovetail being integral with said body member, means to vertically reciprocate said lower dovetail, and said tool block includes a body member having a rearwardly projecting portion forming a pair of complementary parallel horizontal dovetails cooperating with said dovetail recesses and with a central vertical keyway complementary with said key, said tool block being insertable into said holder in a direction normal to the longitudinal axis of said dovetail recesses with the lower dovetail retracted, said lower dovetail being reciprocated upwardly to lock said tool holder against said upper dovetail recess and key, and a generally cylindrical gripping surface formed at each end of the tool block body member with an upper integral support ledge for each gripping surface, said gripping surfaces and ledges cooperating with a gripping member on said shifting means.

4,553,314

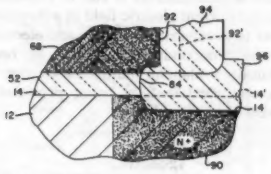
METHOD FOR MAKING A SEMICONDUCTOR DEVICE

Tsiu C. Chan, Carrollton; Chao Mai, and Myint Hswe, both of Dallas, all of Tex., assignors to Mostek Corporation, Carrollton, Tex.

Division of Ser. No. 351,726, Feb. 24, 1982, abandoned, which is a continuation of Ser. No. 100,606, Dec. 5, 1979, abandoned, which is a division of Ser. No. 2,426, Jan. 10, 1979, abandoned, which is a continuation of Ser. No. 762,398, Jan. 26, 1977, abandoned. This application Sep. 30, 1982, Ser. No. 431,527

Int. Cl.[4] H01L *21/22*

U.S. Cl. 29—571 5 Claims



1. A method for making a portion of a semiconductor device comprising the steps of:

(a) forming an oxide insulating layer on a surface of a semiconductor substrate,

(b) forming a polysilicon layer on a selected portion of the oxide insulating layer,

(c) selectively etching away portions of the oxide insulating layer using the polysilicon layer as a mask, thereby exposing a surface portion of the substrate previously covered by the oxide insulating layer, and thereby incidentally partially undercutting the polysilicon layer by lateral etching of portions of the oxide insulating layer under a peripheral edge of the polysilicon layer such that the depth of the undercutting is equal to or greater than the thickness of the oxide insulating layer,

(d) diffusing dopants into the substrate through the exposed substrate portion, and

(e) exposing the substrate to an oxidizing ambient simultaneously to oxidize both the peripheral edge of the polysilicon layer and the exposed substrate surface portion adjoining the lateral undercut region, such that the lateral undercut region is filled by a substrate oxide component and a peripheral edge polysilicon layer oxide component as both oxide components expand and grow in response to the oxidizing ambient.

4,553,315

N CONTACT COMPENSATION TECHNIQUE

Chris McCarty, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Apr. 5, 1984, Ser. No. 597,060

Int. Cl.[4] H01L *21/265, 21/28*

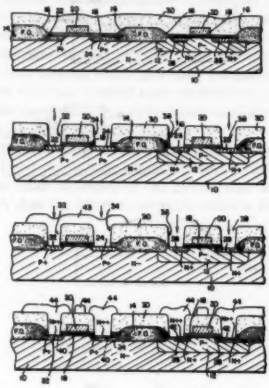
U.S. Cl. 29—571 7 Claims

1. A method of fabricating contacts to CMOS devices having N and P conductivity type source and drain regions in P and N conductivity type body regions respectively of a substrate, a gate oxide layer and gate layer, a field oxide layer on said substrate adjacent said source and drain regions comprising:

forming a dielectric layer covering said substrate;

removing portions of said dielectric layer to expose contact areas of said source and drain regions;

ion implanting N type impurities into said contact areas of said N type source and drain regions to form a contact region of a shallower depth than said source and drain regions; and



applying a layer of conductor material without intermediate etching and delineating to form contacts and interconnects.

4,553,316

SELF-ALIGNED GATE METHOD FOR MAKING MESFET SEMICONDUCTOR

Theodore W. Houston; Al F. Tasch, Jr., both of Richardson; Henry M. Darley, Plano, all of Tex., and Horng S. Fu, Sunnyvale, Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 334,405, Dec. 24, 1981, Pat. No. 4,455,738. This application Mar. 12, 1984, Ser. No. 588,630

Int. Cl.[4] H01L *21/302, 21/265*

U.S. Cl. 29—571 2 Claims

1. A method for fabrication of a MESFET device in which the gate is self-aligned in relation to the source/drain regions of said device, comprising the steps of:

growing a layer of silicon oxide on a silicon substrate of p type conductivity;

depositing a layer of heavily doped polysilicon over said layer of silicon oxide;

depositing a layer of insulating material over said polysilicon;

masking of the area to be the gate region of said device;

etching anisotropically to remove all material down to said silicon substrate;

oxidizing the structure in a low temperature steam environment to form an oxide layer on exposed areas of said silicon substrate except in said gate region and said polysilicon;

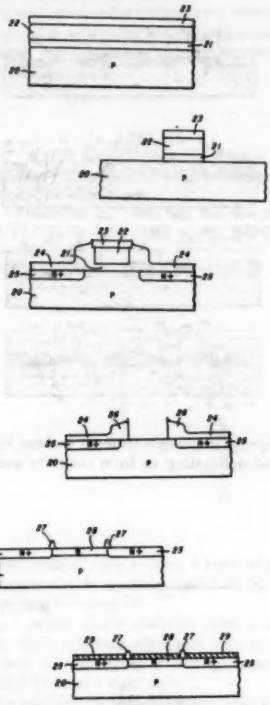
implanting N-type impurity through the oxide grown in the previous step and into the substrate to form N+ source and drain regions;

removing said insulating material over said polysilicon then removing said polysilicon;

etching the structure with an anisotropic plasma etch;

implanting an n type impurity in the gate area between the

remaining vertical sections of oxide to form an active channel for said MESFET device;



depositing a layer of metal over the surface of the structure, and heating to convert the metal to metal silicide where the metal is in contact with said silicon substrate;

etching away metal where not converted to metal silicide.

4,553,317

METHOD OF OBTAINING AN IMPACT IONIZATION COEFFICIENT RATE BY JUNCTION OF DIFFERENT KINDS OF SEMICONDUCTORS

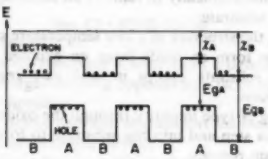
Hiroyuki Sakaki, 174-260, Ohba-cho, Midori-ku, Yokohama-shi, Kanagawa-ken; Tomonori Tanoue, Odawara, and Hideto-shi Nojiri, Matsudo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Hiroyuki Sakaki, Kanagawa, both of, Japan

Filed Oct. 29, 1982, Ser. No. 437,627

Claims priority, application Japan, Nov. 9, 1981, 56-179438; Nov. 9, 1981, 56-179439

Int. Cl.[4] H01L *21/20*

U.S. Cl. 29—572 **4 Claims**



1. A method of obtaining an impact ionization coefficient rate, comprising the steps of:

forming a layer of a semiconductor A and a semiconductor B so that the following conditions are satisfied:

$$X_A<X_B,\ X_A+E_{gA}<X_B+E_{gB}$$

wherein X_A is the electron affinity of the semiconductor A, E_{gA} is the forbidden band width of the semiconductor A, X_B is the electron affinity of the semiconductor B and E_{gB} is the forbidden band width of the semiconductor B;

irradiating said layer with light to generate holes and electrons;

separating said holes and electrons by diffusion into the layers of the semiconductors A and B, respectively; and

applying a direct-current electric field in a direction parallel to said layer to accelerate said holes and electrons in said layers of the semiconductors A and B, respectively, thereby causing avalanche multiplication due to impact ionization, said electric field being provided independently of said irradiating light.

4,553,318

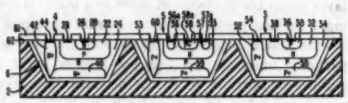
METHOD OF MAKING INTEGRATED PNP AND NPN BIPOLAR TRANSISTORS AND JUNCTION FIELD EFFECT TRANSISTOR

Hosekere S. Chandrasekhar, Whitehouse Station, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 2, 1983, Ser. No. 490,954

Int. Cl.[4] H01L *21/225*

U.S. Cl. 29—577 C **7 Claims**



1. A method of forming a semiconductor device comprising the steps of:

(a) forming a plurality of spaced apart conductive wells in the surface of a substrate, each of said wells being dielectrically isolated from said substrate, a first of said wells being of first conductivity type material and a second and third of said wells being of a second conductivity type material, each of said wells having a deep diffusion region and a buried layer region in electrical communication therewith;

(b) forming a channel of said first conductivity type material in said second well;

(c) forming a base of said second conductivity type material in said first well;

(d) forming a base of said first conductivity type material in said third well;

(e) forming concurrently a top gate of said second conductivity type material and a bottom gate contact area in said second well, an emitter of said second conductivity type material in said third well, and a base contact area in said first well;

(f) forming an emitter of first conductivity type material in said first well, a source and a drain of first conductivity type material in said second well, and a base contact area in said third well;

(g) forming a layer of platinum: said deep diffusion region, said base contact area, and said emitter of said first well; said deep diffusion region, said source, said top gate, and said drain in said second well; and

said deep diffusion region, said base contact, and said emitter in said third well;

(h) alloying said platinum layer of step (g) with the surface of said substrate to form platinum silicide; and

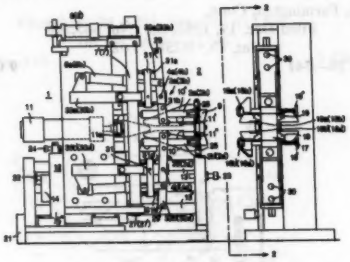
(i) forming a plurality of electrical contacts, one on each platinum silicide surface.

4,553,319

METHOD FOR CONNECTING THE ENDS OF STATOR WINDINGS TO THE STATOR SUPPLY TERMINALS

Bruno Fischer, Dietikon, and Angelo Andretta, Urdorf, both of Switzerland, assignors to Micafil AG, Zurich, Switzerland

Division of Ser. No. 341,140, Jan. 20, 1982, Pat. No. 4,428,113.
This application Nov. 14, 1983, Ser. No. 551,260
Claims priority, application Switzerland, Jan. 29, 1981, 571/81
Int. Cl.[4] H02K *15/00*
U.S. Cl. 29—596 4 Claims



1. A method for connecting the first and second ends of at least one winding of a wound electrical stator to corresponding first and second stator supply terminals, comprising the steps of:

holding the first and second winding ends of a fully wound stator in respective holding elements of a stator holding means,

moving insertion and clamping means toward said stator holding means with each of a pair of tong gripping means in an initial receiving position and open to receive the respective winding ends,

when said tong gripping means have received the respective winding ends, closing said tong gripping means while the winding ends are maintained under tension by said holding elements,

swinging each closed tong gripping means back away from said stator holding means and laterally inwardly such that the closed ends move toward one another in pairs until each tong gripping means is aligned with the corresponding stator supply terminal and the corresponding winding ends have been inserted therein;

actuating tool means to crimp the stator supply terminals, thereby securing the corresponding winding ends thereto; and

opening and simultaneously swinging said tong gripping means to the receiving positions thereof while retracting said insertion and clamping means to the starting position thereof.

4,553,320

ROTOR FOR A DYNAMO-ELECTRIC MACHINE AND METHOD OF MAKING SAME

Keith C. Bryant-Jeffries; Hugh G. Dickie, and Eric V. Vaughan, all of Eastleigh, England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1983, Ser. No. 546,349
Claims priority, application European Pat. Off., Dec. 30, 1982, 82306986.9
Int. Cl.[4] H02K *15/10*
U.S. Cl. 29—598 8 Claims

1. A method of making a rotor for a dynamo-electric machine, the rotor being of the kind having a plurality of loop coils of rectangular plan and arcuate profile arranged edgewise in a cylindrical cup structure, the method comprising the steps of:

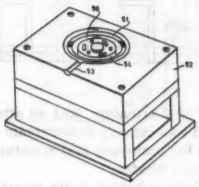
winding the loop coils so that their terminations occur on the same side of the coil;

bonding the turns of each coil together;

providing a mould having an outer cylindrical portion, an inner cylindrical core, a bottom and a removable top;

positioning the coils within and against the inner wall of the outer cylindrical mould portion, the outer cylindrical mould portion having insert portions extending into and coextensive with the central apertures of the coils so that the coils are supported in a cylindrical configuration with gaps between their adjacent edges;

feeding the coil terminations through slots in the outer rim of a discoidal end cap whose outer diameter is generally the same as the inner diameter of the cylindrical coil configuration such that the terminations are outside the end cap;



placing the end cap over the mould outer cylindrical portion and inner core and the cylindrical coil configuration;

placing the mould top over the end cap to close the mould and thereby define the mould cavity completely, the closing of the mould with the top also securing the coil terminations against movement during moulding; and

introducing molten plastics material under pressure into the mould cavity around one edge of the cylindrical coil configuration so that the plastics material penetrates between the coils and around their periphery to encapsulate them and into the slots in the end cap to key the end cap and coils together, thereby forming the rotor with the end cap as an integral part thereof.

4,553,321

METHOD AND APPARATUS FOR THE AUTOMATIC PRODUCTION OF ARMATURES FOR ELECTRIC MOTORS

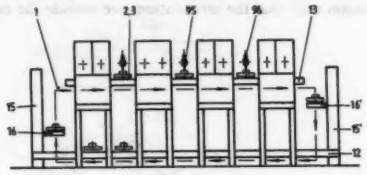
Siegfried Zihlmann, Wurenlos, and Werner Streiff, Zurich, both of Switzerland, assignors to Micafil AG, Zurich, Switzerland

Filed Jan. 4, 1984, Ser. No. 568,071
Claims priority, application Switzerland, Aug. 22, 1983, 4557/83
Int. Cl.[4] H02K *15/09*
U.S. Cl. 29—598 12 Claims

1. An apparatus for the automatic production of armatures for electric motors in a cycling system for successively processing said armatures in individual stations independently of each other, the apparatus comprising:

a production line having a revolving conveyor means for transporting at least one workpiece holder along said production line in a direction of transport;

a plurality of processing stations successively located along said production line for successively processing said armature, said plurality of processing stations including an armature loading station for clamping an armature into said at least one workpiece holder, a collector press-on station located successively downstream of said armature loading station for attaching a collector to said armature, a winding station located successively downstream of said collector press-on station for winding wire about said armature, a welding station located successively downstream of said winding station for welding said wire on said armature, an electrical testing station located successively downstream of said welding station for electrically



testing said armature, and an armature discharge station located successively downstream of said electrical testing station for removing said armature from said at least one workpiece holder;

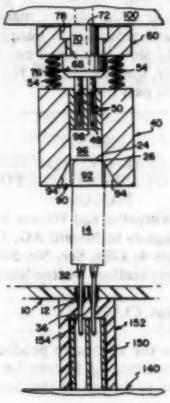
said workpiece holder being transported by the conveyor means to the individual stations, said workpiece holder being arrested and lifted with respect to the conveyor means at each of said plurality of stations, and being secured and connected to the individual station by a coupler device on the workpiece holder, and an actuating device in each of said processing stations which in conjunction with the coupler device causes manipulations of the workpiece holder.

4,553,322

FLOATING LOCATOR HEAD FOR APPLICATION TOOLING

David J. Cappos, Middletown, and Thomas M. Klunk, Dover, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 16, 1984, Ser. No. 610,946
Int. Cl.⁴ B23P *19/00*
U.S. Cl. 29—739 **8 Claims**



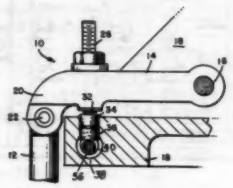
1. A connector insertion tool for mounting to a ram and mass inserting a plurality of posts depending from a connector into a printed circuit board, said tool comprising a body having a top surface and an opposed bottom surface, push-pins extending from said bottom surface, locator slidably mounted on fingers, and spring means effective to urge said locator means away from said body, a recess in the locator means which closely receives the connector therein, the tool further having floatable mounting means to permit lateral float of the tool relative to the ram during the downstroke thereof.

4,553,323

COMPONENT PLACEMENT HEAD CONTROL

William S. Clark, So. Hamilton, Mass., assignor to USM Corporation, Farmington, Conn.

Filed Dec. 19, 1983, Ser. No. 563,260
Int. Cl.⁴ B23P *19/02*
U.S. Cl. 29—741 **9 Claims**



1. An electrical component placement head control for varying the spacing between a component inserting mechanism on the head and the surface of a printed circuit board comprising:

a. an actuator for moving the inserting mechanism toward and away from the board;

b. means to limit the movement of said actuator and thus the movement of the inserting mechanism toward the board;

c. said means including a stop positionable toward and away from said actuator; and

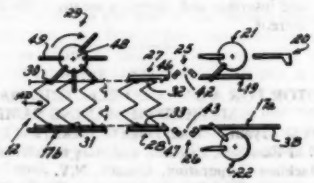
d. said means also including a rotary shaft having an eccentric cam surface that positions said stop upon rotation of said shaft to cause movement of said stop toward and away from said actuator.

4,553,324

COIL SPRING ASSEMBLY MACHINE

Henry Zapletal, Carthage, Mo.; Horst F. Wentzek, and George M. Chembakaffery, both of Kenosha, Wis., assignors to Leggett & Platt, Incorporated, Carthage, Mo.

Division of Ser. No. 300,995, Sep. 10, 1981, Pat. No. 4,492,298. This application May 17, 1984, Ser. No. 611,334
Int. Cl.⁴ B23P *19/00*; B65G *19/00*
U.S. Cl. 29—822 **4 Claims**



1. A machine for assembling successive coil springs into a coil spring assembly, successive rows of said coil springs being tied together by said machine into said coil spring assembly, said machine comprising

a support platen, said coil spring assembly being positioned on said support platen,

lacing means for tying together successive rows of coil springs,

indexing means for moving a partially assembled spring

assembly forwardly one spring row after a newly inserted spring row is tied to the next adjacent row, and

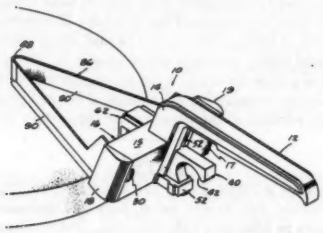
a feed-out wheel operable independently of said indexing means and adapted to move said coil spring assembly along said support platen, said feed-out wheel being operable only after a predetermined number of coil spring rows have been tied together one with the other to form a completed coil spring assembly.

4,553,325

CAKE CUTTER WITH AN ADJUSTABLE BLADE

Edward Allahverdian, 426 Wing St., Ste. 3, Glendale, Calif. 91705

Filed May 21, 1984, Ser. No. 612,575
Int. Cl.⁴ A21C *15/04*
U.S. Cl. 30—114 **3 Claims**



1. In a cake cutter of the type having a housing, a helical screw membr having one side with helixes diverging to the right of center and the other side with helixes diverging to the left of center, and journaled into the housing, a pinion mounted on said helical screw member, a cutting blade having longitudinal sides with ends riding on said helixes, a length limiting plate located in front of said housing, and rack means for moving said longitudinal sides together in conjunction with said pinion and helical screw, the improvement which comprises:

(a) handle means including an inner handle end mounted perpendicularly to the plane of said housing and extending upwardly therefrom, said inner handle end having a slot therein;

(b) trigger means operably connected with said rack means and slidably mounted in said slot; whereby only one hand of an operator is needed to cut and securely remove a piece of cake.

4,553,326

CHAIN SAW BRAKING SYSTEM

James F. West, Rancho Palos Verdes, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

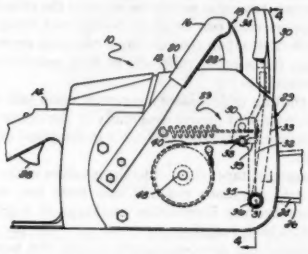
Continuation of Ser. No. 457,909, Jan. 14, 1983, abandoned, which is a continuation-in-part of Ser. No. 376,810, May 10, 1982, abandoned. This application Mar. 12, 1984, Ser. No. 587,843
Int. Cl.⁴ B60T *13/04*; B27B *17/02*
U.S. Cl. 30—381 **30 Claims**

1. In a chain saw having housing means, manual gripping handle means mounted on said housing means, motor means carried by said housing means, a cutting chain, support bar means projecting forwardly from said housing means for supporting said cutting chain for endless movement, rotation transmitting means drivingly connected to said motor means for driving said cutting chain, and safety braking means for stopping said cutting chain, said safety braking means comprising

(a) sensing arm means, pivotally mounted on said housing means, for sensing the approach of an operator's limb to said cutting chain, said sensing arm means having a protrusion mounted thereon, a portion of said sensing arm means being located in front of said gripping handle means during operation of said chain saw and arranged to be moved from a first position to a second position;

(b) a flexible brake band having a first end and a second end, said first end connected to said housing means and said second end connected to said protrusion in a manner such that when said sensing arm means moves from said first position to said second position said flexible band brake is moved from a position free of said rotation transmitting means to a frictional braking relationship with said rotation transmitting means;

(c) a latch mounted on said housing means, said latch rotatable about an axis of rotation and receivingly engaging



said protrusion of said sensing arm means, said latch adapted to be moved from a first latch position to a second latch position when said sensing arm means moves from said first position to said second position; and

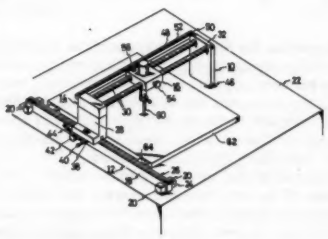
(d) biasing means having a first end and a second end, said first end connected to said housing means at a fixed point and said second end connected to said latch at a fixed point, for cooperation with said latch and said sensing arm means to yieldably urge aid sensing arm means to said first position when said sensing arm means is in said first position and to yieldably urge said sensing arm means to said second position when said sensing arm means is in said second position.

4,553,327

RULER DEVICE FOR USE IN MARKING-OFF

Yosio Watanabe, 389-4, Kuroda Fujinomiya-shi, Shizuoka-ken, Japan

Filed Apr. 2, 1982, Ser. No. 595,802
Claims priority, application Japan, Apr. 15, 1983, 58-65234
Int. Cl.⁴ B43L *13/02*
U.S. Cl. 33—32 B **3 Claims**



1. A ruler device for use in marking-off a workpiece comprising:

(a) a reference rail which is a straight iron bar having a rectangular cross section and a top surface relieved to form a concave groove;

(b) a coupling device mounted upon said reference rail,

comprising a body having a top portion, a middle portion and a base portion, said base portion bearing rollers located so as to contact the top surface and both side surfaces of said reference rail;

(c) support rails inserted into the top portion of said coupling device orthogonal to the reference rail, and parallel to each other;

(d) a scale bar, inserted into the top portion of said coupling device and parallel to said rails, being of rectangular cross section and bearing a concave groove upon its upper surface;

(e) a support member attached at or near one of its end to the ends of the support rails and scale bar opposite said coupling device, lying in the same plane as said coupling device, having at an end opposite to the attachment to said support rails one or more rollers and being of a length such that, when the reference rail rests upon a plane surface, the support rails will be held parallel to said plane surface;

(f) a shifting table slidably mounted upon said support rails, having a tool mount essentially in the center and bearing a device for moving said table in the plane of said support rails;

(g) magnetic tapes fitted into the grooves in the top portions of said reference rail and said scale bar, said magnetic tapes bearing identifiable markings at regular intervals across their lengths;

(h) identifying devices mounted upon the base portion of said coupling device and upon said shifting table, said identifying devices being suitable to determine the location of said coupling device and said shifting table relative to said magnetic tape portions; and

(i) magnets which attach to said reference rail and hold said reference rail firmly to a ferrous metal surface.

4,553,328

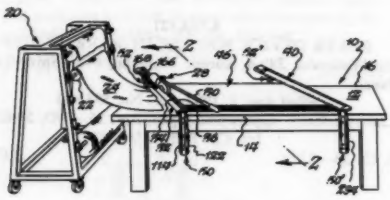
GUIDED LIFTING APPARATUS

John H. Buscher, East Amherst, N.Y., assignor to Eastman Machine Company, Buffalo, N.Y.

Filed Sep. 19, 1983, Ser. No. 533,634

Int. Cl.[4] A41H *3/00*

U.S. Cl. 33—32 G **9 Claims**



1. Apparatus for lifting an elongated bar extending across a substantially planar supporting surface of a structure and extending between opposite sides of the structure, said apparatus holding the elongated bar in an initial position disposed substantially parallel to the supporting surface and operable to lift the elongated bar in a direction away from the supporting surface, said lifting apparatus comprising:

(a) first and second supporting frame means on said opposite sides of the structure and adapted for connection to the structure in fixed relation to the supporting surface;

(b) first and second elongated lifting members each associated with a corresponding one of said supporting frame means and connected at one end thereof to the elongated bar at a corresponding end of the bar and each lifting member being disposed for longitudinal reciprocal movement in a direction substantially perpendicular to the plane of the supporting surface;

(c) first and second guiding means carried by corresponding ones of said first and second supporting frame means and in operative guiding contact with corresponding ones of said lifting members for guiding said lifting elements during said longitudinal reciprocal movement thereof;

(d) said lifting members and said guiding means having co-operating structures allowing pivotal movement of said lifting members about the longitudinal axes thereof to allow adjustment of the angle at which the bar extends across the supporting surface;

(e) first and second weight balancing means operatively connected to corresponding ones of said first and second lifting members and carried by corresponding ones of said first and second supporting frame means for applying to each of said lifting members a force substantially equal and opposite to the weight associated with the elongated bar acting on said lifting members; and

(f) force transmitting and equalizing means operatively connected to each of said supporting frame means and operative1y associated with each of sa1d lifting members and with the elongated bar whereby in response to application of lifting force to one of said lifting members, both of said lifting members act in unison to lift the elongated bar in a direction away from the supporting surface and in a manner maintaining the elongated bar in a plane substantially parallel to the plane of the supporting surface.

4,553,329

DIAL INDICATION TYPE MEASURING INSTRUMENT

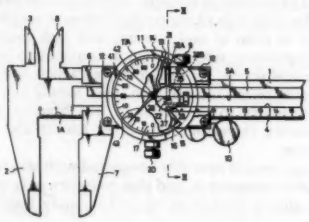
Kenju Uchino, and Tomoo Sakai, both of Utsunomiya, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1984, Ser. No. 573,781

Claims priority, application Japan, Feb. 9, 1983, 58-20420

Int. Cl.[4] G01B *3/20, 5/02*

U.S. Cl. 33—147 T **16 Claims**



1. A dial indication type measuring instrument comprising:

a main body provided therein with a rack;

a slider having a dial indicating portion and movably supported on said main body;

biasing means for biasing a driving pinion for driving a needle in said dial indicating portion toward said rack to bring said driving pinion into meshing engagement with said rack; and

releasing means for releasing said driving pinion from said rack against the biasing force of said biasing means and having a control end being disposed outwardly of said slider.

4,553,330

MICROMETER

Mineo Yamauchi, and Yoshimitu Karahashi, both of Kawasaki, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1983, Ser. No. 557,767

Claims priority, application Japan, Dec. 20, 1982, 57-223582; Dec. 20, 1982, 57-192757[U]

Int. Cl.[4] G01B *3/18*

U.S. Cl. 33—164 R **16 Claims**

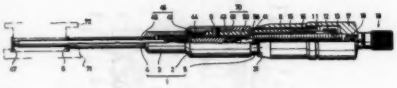
1. A micrometer, comprising:

a main body;

a thimble rotatably supported on said main body;

a first spindle supported for rotation on said main body in response to the rotation of said thimble, said first spindle means being threadably coupled to said main body in a manner to be movable in the axial direction thereof upon rotation thereof;

a second spindle locked against rotation and axially movably



supported on said main body on the same axis as said first spindle; and

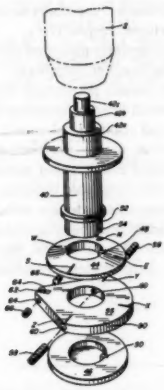
connecting means for connecting said first and second spindles integrally and inseparably to each other in a condition where no axial force is applied to the spindles in either direction, and when said first spindle is rotated and moved in the axial direction thereof, only the axial force of said first spindle is transmitted to said second spindle.

4,553,331

CENTERING APPARATUS AND METHOD

Ameen Salaam, 7558 S. Essex Ave., Chicago, Ill. 60649

Filed Apr. 14, 1983, Ser. No. 484,932
Int. Cl.⁴ G01B 5/25
U.S. Cl. 33—172 D **13 Claims**



1. A centering device for use with a machine tool having a drive member with a center axis and having a work platform in opposed relation to said drive member for accommodating a work piece, said centering device being adapted for attachment to said drive member and comprising

a stationary member;

a moveable member positioned adjacent to said stationary member, said moveable member having indicator means for contacting a work piece and being moveable throughout a substantially 360 degree arc in a plane substantially perpendicular to the center axis of said drive member;

fixing means for alternatively permitting or preventing movement of said moveable member relative to said stationary member; and,

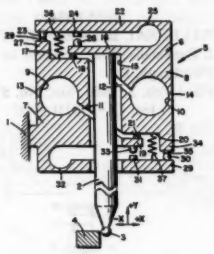
locating means on said moveable member and on said stationary member for indicating the relative position of said moveable member to said stationary member in each quadrant of said arc for permitting determination of the center point of the work piece.

4,553,332

PROBE FOR CHECKING LINEAR DIMENSIONS

Guido Golinelli, Bologna, and Carlo Dall'Aglio, Volta Reno Di Argelato, both of Italy, assignors to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy

Filed Oct. 18, 1983, Ser. No. 543,011
Claims priority, application Italy, Oct. 18, 1982, 3563 A/82
Int. Cl.⁴ G01B 7/02
U.S. Cl. 33—561 **13 Claims**



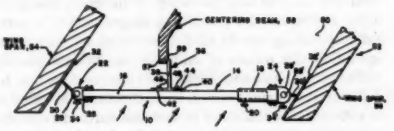
1. A probe for checking linear dimensions, like dimensions of mechanical pieces, comprising support means, an arm movable with respect to the support means and carrying at an end feeler means adapted for touching a piece to be checked, the movable arm defining a longitudinal geometrical axis, connection means for connecting the arm to the support means for allowing the displacement of the feeler means with respect to the support means along two opposite directions, and detection means associated with the arm and the connection means for detecting said displacement, wherein said connection means include an integral member with a first portion fixed to the movable arm, a second portion fixed to the support means and an intermediate portion with two sections of smaller thickness adapted for defining two parallel and distinct axes of mutual rotation of the first and second portion, the detection means including a first pair of elements with a first element coupled to the first portion and a second element coupled to the intermediate portion and a second pair of elements with a third element coupled to the second portion and a fourth element coupled to the intermediate portion.

4,553,333

SYSTEM FOR PRODUCING PRECISION MEASUREMENTS OF WING RIBS

Jeffrey L. Shurtliff, 1669 N. 2800 W., Clinton, Utah 84015

Filed Aug. 14, 1984, Ser. No. 640,637
Int. Cl.⁴ G01B 5/14
U.S. Cl. 33—180 R **16 Claims**



1. An interior angle measuring device comprising:

an adjustable elongated support bar;

means adjustably connected to each end of said support bar for conforming to the interior angles of the sides of a cavity formed within an object in order to determine said angles;

means adjustably mounted on said support bar for determining the position of said support bar relative to said sides of said cavity, said position determining means including a T-shaped component having a base and an outstanding

element protruding therefrom for engaging a side of a preselected element situated intermediate said sides of said cavity, said base being adjustably mounted on said support bar; and

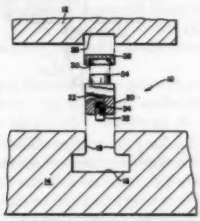
means operably associated with said adjustably support bar, said adjustably angle determining means and said adjustably position determining means for locking said support bar, said angle determining means and position determining means in place.

4,553,334

UNIVERSAL DOWEL PIN SYSTEM

Edwin H. Fell, Pensacola, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 3, 1984, Ser. No. 576,680
Int. Cl.[4] G01B *3/00*
U.S. Cl. 33—181 R 20 Claims



1. A universal dowel pin system for properly aligning, by means of any one of a plurality of different dowel pins, any one of a plurality of different workpiece fixtures with respect to any one of a plurality of different machine tool tables in connection with which it is desired to employ said any one of said plurality of different workpiece fixtures, comprising:

slot means defined within said any one of said plurality of different machine tool tables, the width dimension of said slot means defined within said any one of said plurality of different machine tool tables being singularly specific to said any one of said plurality of different machine tool tables and different from the width dimension of said slot means defined within other ones of said plurality of different machine tool tables;

first bore means defined within said any one of said plurality of different workpiece fixtures, the diametrical extent of said first bore means defined within said any one of said plurality of different workpiece fixtures being of the same standardized dimensional value within all of said different workpiece fixtures; and

each one of said plurality of different dowel pins having a first section, the width dimension of which substantially corresponds to said singularly specific width dimension of said any one of said plurality of different machine tool table slot means for permitting disposition of a particular corresponding one of said dowel pins within said corresponding slot means of said any one of said plurality of different machine tool tables, and a second section having a diametrical extent which has a dimensional value which is substantially the same as said standardized dimensional value of said first bore means defined within said any one of said plurality of different workpiece fixtures so as to be capable of operatively interfacing with all of said different workpiece fixtures,

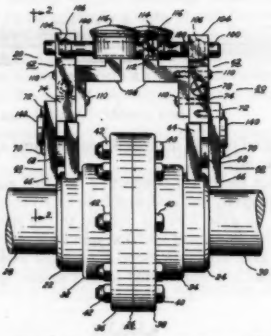
whereby once a particular one of said plurality of different dowel pins is disposed within said corresponding one of said plurality of different machine tool tables, any one of said plurality of different workpiece fixtures may be readily utilized in conjunction with said any one of said plurality of different machine tool tables in a properly aligned manner.

4,553,335

SHAFT ALIGNMENT DEVICE

Joseph T. Woyton, Mauldin, S.C., assignor to Reliance Electric Company, Greenville, S.C.

Filed Jul. 16, 1984, Ser. No. 630,982
Int. Cl.[4] G01B *3/30*
U.S. Cl. 33—181 R 31 Claims



1. An alignment device for use in axially aligning first and second rotatable elements, comprising:

a. a first magnetic base portion for mounting on the first rotatable element;

b. a second magnetic base portion for mounting on the second rotatable element;

c. first and second bracket members secured to said first and second base portions, respectively;

d. first and second pivotally mounted swivel blocks disposed in said respective bracket members;

e. a first extension means projecting from said first swivel block to said second bracket member for sensing the position of said second rotatable element;

f. a second extension means projecting from said second swivel block to said first bracket member for sensing the position of said first rotatable element; and

g. at least one measurement device selectively mounted on either of said bracket members for detecting the degree of deflection of each of said swivel blocks and hence the position of said rotatable elements relative to one another.

4,553,336

LATCH FACE TEMPLATE FOR A PORTABLE ROUTER

Felix C. Ponce, 978 S. Westmoreland Ave., Los Angeles, Calif. 90006

Filed May 16, 1983, Ser. No. 494,855
Int. Cl.[4] B27F *5/12*
U.S. Cl. 33—197 4 Claims

1. A latch face template for use in combination with a hand-held router in order to guide the hand-held router in cutting an opening for a latch face in the side of a door, said latch face template comprising:

a. a rectangular base having a top surface and a bottom surface and also having a rectangular slot;

b. width varying means for varying the width of said rectangular slot, mechanically coupled to said rectangular base;

c. a guide stopping means for controlling the length of the

opening for the latch face, said guide stopping means being mechanically coupled to said rectangular base; and

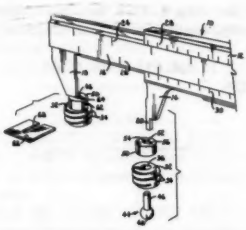
d. position varying means for varying the position of said latch face template on the side of the door, mechanically coupled to said rectangular base.

4,553,337

THREAD GAUGE FOR MEASURING THREAD PITCH DIAMETERS

Albert L. Brewster, R.R. 2, Box 190A, Pleasant Hill, Mo. 64080

Filed Jan. 6, 1984, Ser. No. 568,837
Int. Cl.[4] G01B *3/40*
U.S. Cl. 33—199 R **17 Claims**



1. A thread gauge device attachable to a measuring instrument having a pair of blades for use in measuring the pitch diameter of a threaded part, said device comprising:

a pair of anvils each presenting external threads having substantially the same pitch as the threads on the threaded part;

a stem for each anvil;

a ball and socket connection between each stem and the corresponding anvil, said anvils being rotatable about said connections so that each anvil can become skewed on its stem to permit the external threads on the anvils to mate in direct mating contact with the threads on the threaded part when the anvils are applied to the part for measurement of the pitch diameter thereof;

means for connecting said stems to the blades of the measuring instrument to mount each anvil at a predetermined location relative to the corresponding blade for accurate measurement of the pitch diameter of the threaded part; and

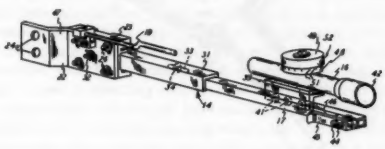
means for spacing each connecting means away from the corresponding anvil by a distance equal to one-half the pitch of the threaded part.

4,553,338

ARCHERY BOW ADJUSTABLE SCOPE MOUNT

Gary J. LeBeau, 2411 - 90th St., Sturtevant, Wis. 53177

Filed Sep. 10, 1984, Ser. No. 648,576
Int. Cl.[4] F41G *1/00*
U.S. Cl. 33—265 **8 Claims**



1. In an archery bow adjustable scope mount having a bow and an archery string attached thereto and having an arm with one end supported from said bow and a scope mounted on the other end of said arm, the improvement comprising an adjustable member adjustably mounted on said bow for adjustable movement in the plane of said bow and there being fastening means for securing said adjustable member in adjusted positions on said bow, said arm being pivotally mounted on said adjustable member for swinging movement in the plane of said bow for selectively positioning said arm substantially parallel to said bow, for storage, and also transverse to said bow where said scope is available for sighting use adjacent the archer's eye when the archer has drawn said string in normal use, said arm and said adjustable member having a stop operative therebetween for locating the pivoted position of said arm on said adjustable member when said arm is pivoted to the transverse position, said adjustable member being adjustably mounted on said bow for selectively positioning said scope along said plane and thereby accommodate different size archers.

4,553,339

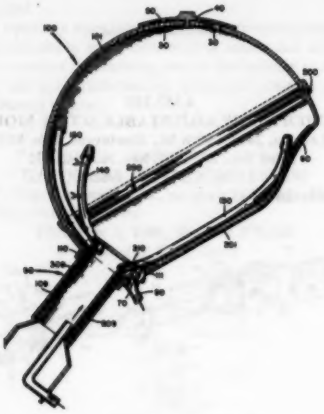
APPARATUS FOR GENERATING A CONTROLLABLE STEAM AND OZONE MIXTURE AND HAIR-DRYER FOR UNIFORMLY DISTRIBUTING SAID MIXTURE ON HAIR

Giuseppe Rigo, Corso Europa 675/7, 16148-Genova, Italy

Filed Aug. 9, 1983, Ser. No. 521,565
Claims priority, application Italy, Aug. 9, 1982, 12609 A/82; Oct. 21, 1982, 12641 A/82
Int. Cl.[4] A45D *21/00*
U.S. Cl. 34—99 **1 Claim**

1. A bonnet type hair-dryer for the treatment of hair by mixture of steam, air and ozone at different percentages of the mixture components which hair-dryer comprises a hemispherical bowl and means for supplying said mixture to the inside of the bowl and for spreading it over the user's scalp which means consist of a connector through which the mixture is fed into the bowl at the user's nape and of a plurality of tubes disposed as rays which branch from said connector and extend along the bowl inner surface at a short distance therefrom, each tube being provided with a series of regularly spaced nozzles adapted for directing said mixture towards the bowl inner surface, said bowl at its top being provided with an aeration

means having an adjustable opening comprising a crown of holes through the bowl and a rotatable disk provided with a



crown of holes concentric and identical to said crown of holes of the bowl.

4,553,340

SEALING DEVICE IN A CYLINDER DRIER

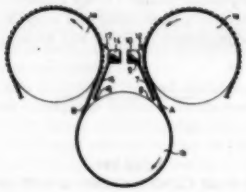
Rolf Petersson, Eneryda, Sweden, assignor to Flakt Aktiebolag, Nacka, Sweden

Filed May 17, 1984, Ser. No. 611,143

Claims priority, application Sweden, May 30, 1983, 8303025

Int. Cl.[4] F26B *13/08*

U.S. Cl. 34—114 **14 Claims**



1. A sealing device in a cylinder drier for drying a paper web, intended for incorporation in a paper machine and including a plurality of cylinders having cylindrical surfaces arranged in two substantially parallel rows, the paper web being taken in a serpentine path during drying, while being carried in a transport direction by an endless porous Fourdrinier wire, the latter being adapted to press the paper web against the cylindrical surfaces in one row of cylinders and being situated between the paper web and the cylindrical surfaces in the other row, there being means provided to prevent the paper web from lifting from the wire due to pressure differences on either side of the web when it is taken between the cylinders, characterized in that said means comprises to shielding members which are located in a space restricted by the wire and an intermediate cylindrical surface on that cylinder which the wire and the web come onto and leave, said shielding members facing the wire and extending substantially in parallel with and close to the wire and substantially over the entire width of the web, and that each shielding member has a free end portion and extends into a nip area between the wire and the intermediate cylinder, the nip area between the wire and the intermediate cylinder where the wire comes into contact with the intermediate cylinder being an excess pressure nip and the nip area between the wire and the intermediate cylinder where the wire lifts off the intermediate cylinder being a sub-pressure nip, the opposite end portion of each shielding member being connected to a blowing box which is provided with openings for blowing air jets against the wire, the air jets being directed away from the shielding member, and in that the free end portion of one of said shielding members is situated within the nip area for the excess pressure nip where the wire and the web come onto the intermediate cylinder and the air jets from the corresponding blowing box are directed generally opposite the transport direction of the web, whereas the end portion of the other shielding member is situated within the nip area for the sub-pressure nip where the wire and the web leave the same cylinder, whereby the air jets from the corresponding blowing box are directed generally with the transport direction of the web.

4,553,341

APPARATUS FOR THE HEAT TREATMENT OF LASTED SHOE UPPERS

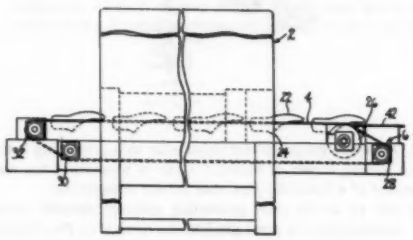
Raymond Hanson, Rearsby, and Malcolm Tillyard, Leicester, both of England, assignors to USM Corporation, Farmington, Conn.

Filed Aug. 8, 1984, Ser. No. 638,961

Claims priority, application United Kingdom, Aug. 10, 1983, 8321496

Int. Cl.[4] F26B *17/00*

U.S. Cl. 34—236 **17 Claims**



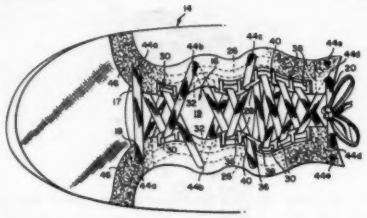
1. Apparatus for treating lasted shoe uppers, comprising a treatment station, a movable conveyor belt and drive means therefor, said belt being adapted to progressively present portions of lasted shoe uppers to the treatment station, and support means for the belt, wherein the conveyor belt contains a row of slots having a long dimension which extends in the direction of movement of said conveyor belt, each slot being so dimensioned that a lasted shoe upper can be supported bottom up by the conveyor belt with its last cone projecting into the slot, and further wherein the support means is such that the belt is supported adjacent the path of movement of the slots by physical engagement while remaining physically unsupported beneath said path of movement of the slots.

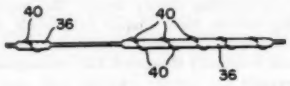
4,553,342

ARTICLE OF FOOTWEAR WITH AN ADJUSTABLE WIDTH, ADJUSTABLE TENSION CLOSURE SYSTEM

Thomas Derderian, Exeter, and Daniel J. Richard, Portsmouth, both of N.H., assignors to Nike, Inc., Beaverton, Oreg.

Filed Apr. 8, 1983, Ser. No. 483,254
Int. Cl.[4] A43B 5/00; A43C 5/00
U.S. Cl. 36—97 17 Claims





1. A closure element, for attachment along the tongue opening of an article of footwear to receive and guide shoelaces of a lacing system, comprising:

a plurality of shoelace encircling members adapted to be attached along the edges of the tongue opening, said shoelace encircling members being sized larger than the cross-section of the shoelace to permit the shoelace to pass freely therethrough; and

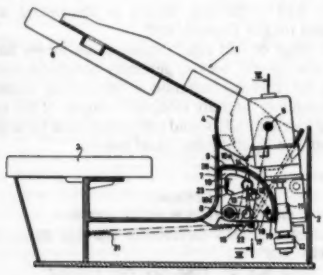
a spiral edge formed on an outer surface of each of said shoelace encircling members for guiding a shoelace threaded through said shoelace encircling member in a generally upwardly inclined direction of the tongue.

4,553,343

AUTOMATIC IRONING PRESS

Marco Primati, Cinisello Balsamo, and Leonardo Calderini, Monza, both of Italy, assignors to Stabilimento Industriale Srl, Monza, Italy

Filed Jul. 2, 1984, Ser. No. 626,717
Claims priority, application Italy, Jul. 13, 1983, 22046 A/83
Int. Cl.[4] D06F 71/04
U.S. Cl. 38—33 8 Claims



1. An automatic ironing press comprising:

a bedplate;

a first ironing plate fastened to said bedplate;

a pressing arm, having a first end and a second end, mounted onto said bedplate so as to rotate said first end between an opened or raised position with respect to said first ironing plate and a closed or thereupon superimposed position;

a second ironing plate pivotally fastened to the first end of the pressing arm;

means for the controlled heating of the material undergoing the ironing;

driving means for supplying a driving force to move said pressing arm between the two positions of said first end;

sensing means for the control of the operation of said driving means; and

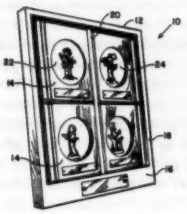
force transmitting means for transmitting force from said driving means to said pressing arm to move said pressing arm between the two positions of said first end, said force transmitting means applying a predetermined closing force to said arm when said first end is in said closed position, said force transmitting means comprising first and second connecting rods pivoted to each other to form a toggle joint, said toggle joint including a moveable pin adapted to operate said sensing means, the free end of said first connecting rod being pivotally connected to a guide means for moving said free end of said first connecting rod along a predetermined pathway, said guide means being operably connected to said driving means, the free end of said second connecting rod being pivotally connected to the second end of said pressing arm, and spring means connected to said guide means for applying a force to said moveable pin.

4,553,344

MULTIFRAME APPARATUS

Gene L. Rubin, 216 Sanhican Dr., Trenton, N.J. 08618; Anthony H. Filipowicz, 838 Park Ave., Trenton, N.J. 08629, and Frank Valenza, 771 N. Clinton, Trenton, N.J. 08638

Filed Apr. 9, 1984, Ser. No. 598,049
Int. Cl.[4] A47G 1/00
U.S. Cl. 40—152 10 Claims



1. A frame apparatus comprising:

a plurality of subframes for displaying items;

a groove means on the periphery of said subframes;

a main frame for surrounding and supporting said subframes;

a hole in the back of said main frame;

a first rib means on the interior edge of said main frame for engaging said groove means in said subframes;

a locking means for holding said subframes in position in said main frame;

a second rib means on said locking means for engaging the groove means of said subframes;

an aperture means in said main frame for sliding said locking means into said main frame;

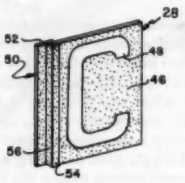
a keeper means for securing said locking means in said main frame after said locking means has been inserted into said aperture means,

wherein said keeper means comprises a screw means which is screwable into said locking means through said hole in the back of said main frame.

4,553,345
DISPLAY LETTER MOUNTING AND METHOD THEREFOR

John R. Bercier, Elmhurst; Thomas C. Cieslowski, Villa Park; Gary E. Delaquila, Glen Ellyn; James W. Leone, Elmhurst, and Paul H. Mauersberger, Melrose Park, all of Ill., assignors to Wagner Zip-Change Inc., Chicago, Ill.

Filed Jun. 8, 1983, Ser. No. 502,281
Int. Cl.[4] G09F *13/04*
U.S. Cl. 40—576 6 Claims



1. In a sign having a plurality of alphanumeric characters of different lateral dimensions, said sign including a generally planar front portion and a plurality of vertically spaced, generally horizontally oriented, parallel support members mounted therein, wherein adjacent support members include respective facing recessed track portions extending the length thereof, a method for displaying said characters comprising:

fabricating a plurality of flat, unitary, generally rectangular panels of different widths having a translucent portion and an opaque portion of a first color surrounding said translucent portion so as to define an alphanumeric character integral with and in the plane of said panel, wherein the width of each panel is determined by the lateral dimension of the alphanumeric character defined thereon;

forming a plurality of h-shaped partitions of said first color, each of said partitions including generally parallel forward and aft members, with said forward member wider than said aft member, and an interconnecting member generally perpendicular to said forward and aft members and coupled to one end of said aft member and to an intermediate portion of said forward member and wherein that portion of said partition comprised of the immediately adjacent surfaces of said forward, aft and interconnecting members is adapted for secure positioning on a single lateral edge of a respective panel in spaced relation from an alphanumeric character thereon;

securely affixing one of said partitions to a lateral edge of a respective panel;

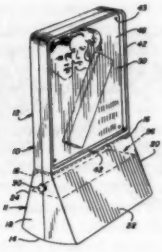
inserting the combination of said panel and partition affixed thereto into the facing recessed track portions of adjacent support members wherein each of said panels and attached partitions is securely maintained in position in a front portion of said sign in a generally planar, aligned array with a forward portion of each of said partitions engaging a panel immediately adjacent to the panel to which it is affixed in an overlapping manner; and

positioning a background screen of a second color in high contrast with said first color immediately aft of said panels wherein said background screen is visible from the front of said sign through the translucent portions of said panels so as to provide high definition of said alphanumeric characters but is not visible between immediately adjacent panels where said partitions are positioned.

4,553,346
DISPLAY DEVICE

Kenneth A. Glasener, Golf, Ill., assignor to Dynagraphic Merchandising Corp., Chicago, Ill.

Filed Jul. 5, 1983, Ser. No. 510,633
Int. Cl.[4] G09F *7/00*
U.S. Cl. 40—602 1 Claim



1. In a self-righting display device, the combination of a self-righting hollow base, shaped to provide an elongated rocking body with a laterally elongated, convex, lowermost rocking wall, a laterally elongated, flat, rectangular upper wall spaced opposite the convex rocking wall, said upper wall having one pair of opposed end edges and a pair of opposed side edges, the end edges being transverse to the side edges; and four upright side walls, each side wall extending from one edge of the laterally elongated upper wall to an edge of the convex rocking wall, to provide a first pair of parallel, spaced, upright end walls of partially frustro-conical shape, as seen in elevation, and a second pair of side walls that are outwardly inclined from an elongated edge of the upper wall to an elongated edge of the convex rocking wall, and the lateral ends of each side wall being integral with an edge of an end wall to provide a hollow six-sided base for the self-righting display device, said six sides of said laterally elongated six-sided base bounding a hollow chamber that is adapted to receive and hold therein a flowable ballast material to provide a substantial weight within the base;

the base being formed of plastic to provide a lightweight body;

one upright wall of the base having a selectively openable and closeable aperture provided therein, through which a flowable ballast may be introduced into the hollow chamber of the base;

a rigid display panel means that is provided separable from said base, but is adapted to be easily assembled on the base, in the field, to be supported on the base, said display panel means providing a bottom edge of a size and shape to abut only the upper wall of the base;

the upper wall of the base having an upstanding laterally elongated tongue thereon; and

the lower edge of said rigid display panel means having a single non-circular socket, generally congruent with said tongue, for receiving thereinto, in telescoping cooperation said upstanding laterally elongated tongue of the base, to provide a structurally sound interconnection between said base and said rigid display panel means.

4,553,347
GUN TRIGGER ACTUATOR

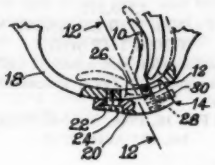
Francis J. Jackson, 2555 Sweetwater Springs Blvd., Spring Valley, Calif. 92077

Filed Jun. 25, 1984, Ser. No. 624,052
Int. Cl.[4] F41C *19/00, 19/02*
U.S. Cl. 42—69 R 14 Claims

1. For a gun having a trigger having a firing mode, and a gun body including a trigger guard passing at least partially around

said trigger, a trigger actuator for reducing the pulling force required to fire the gun comprising:

(a) a lever apparatus pivoted to said trigger guard at a pivot point adjacent the tip of said trigger and extending upward forwardly of said trigger but close enough to same that a trigger finger can be operatively inserted in front of said lever apparatus clear of said trigger guard;



(b) said lever apparatus being shaped, pivoted, and positioned with respect to said trigger such that said lever apparatus can be pivoted forwardly out of the way of said trigger in a passive mode, or alternatively flipped rearwardly into a fire-ready mode in which a lower portion of said lever apparatus rests against the tip of said trigger without actuating same, and then being pullable into a firing mode in which the lever apparatus is pulled further back to actuate said trigger and fire said gun.

4,553,348
FISHING LURE
Raymond M. Cooper, 53 Hamilton St., Allendale, N.J. 07401
Filed Mar. 2, 1984, Ser. No. 585,507
Int. Cl.[4] A01K *85/00*
U.S. Cl. 43—42.06 **9 Claims**

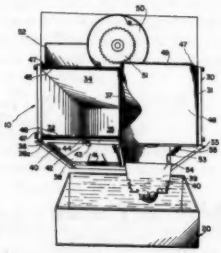
1. A fishing lure, for containing bait which can be seen and smelled by fish from the exterior thereof, comprising:

a container having a leading end portion for connection to a fishing line and for inflow of water and having a trailing end portion for outflow of the water and having a cavity for holding the bait and having a center portion with a sliding door for inserting the bait into the cavity;

said sliding door having a locking device, said locking device including a first end portion, said first end portion including a groove with an abutment, said center portion including a cooperating surface for coacting with said groove and abutment to retain said sliding door in a locked position, said first end portion including a flexible portion disposed adjacent said locking device, whereby a downward force on said flexible portion causes said abutment to move down and out from engagement with said cooperating surface for unlocking the door; and

at least one swivel hook having an upper portion for connection to the container and having a lower portion with at least one barbed extension for catching a fish and having a swivel connection connecting the lower portion to the upper portion.

4,553,349
MOUSETRAP
Jen-Fa Tsai, No. 41, Si-Wei St., San Chung City, Taipei Hsien, Taiwan
Filed Aug. 31, 1983, Ser. No. 528,180
Int. Cl.[4] A01M *23/06*
U.S. Cl. 43—70 **10 Claims**



1. A mousetrap for trapping and drowning mice, said mousetrap comprising

an upwardly open tank for containing liquid,

a housing removably mounted on top of said liquid-containing tank, said housing including opposite side walls, a top wall, an openable rear wall, an interior partition wall, and a floor, said housing having a front end which is open, said interior partition wall extending from said floor to said top wall and from said rear wall to said open front end so as to divide said housing into two identical trap chambers, and said floor including two pivotable drop sections located near said open front end and a two upwardly open bait containers located near said rear wall, one of said drop sections and one of said bait containers being located at the bottom of a respective trap chamber,

two slide rods mounted between said opposite side walls of said housing at said open front end thereof, each slide rod having a coiled spring positioned therearound at its opposite ends,

a gate slidingly mounted on said slide rods to be horizontally movable for covering the portion of the open front end of said housing forming the opening into one or the other of said trap chambers, said gate including an upper edge with teeth therealong,

an electric motor mounted on the top of said housing, said electric motor including a cog wheel which engages the teeth of said gate for horizontally moving said gate, and

a microswitch with associated sensor located in each of said trap chambers, each microswitch being connected to said electric motor, such that when a mouse enters the trap chamber which is not covered by said gate to get to the bait in the bait container and contacts said sensor, the associated microswitch will send a signal to said electric motor to cause it to move said gate to cover the opening of the trap chamber in which the mouse is located, the drop section thereafter pivoting to cause the mouse to drop into said water tank to drown, the other trap chamber being concurrently opened for trapping and drowing another mouse.

4,553,350

METHOD AND APPARATUS FOR APPLYING CHEMICALS TO WEED AND PLANTS

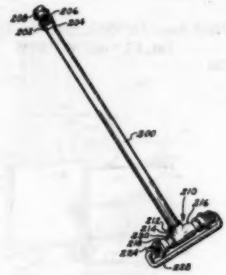
James H. Hardy, P.O. Box 259, Rt. 2, and James E. Roberson, 220 Bates St., both of Batesville, Miss. 38606

Continuation-in-part of Ser. No. 945,875, Sep. 26, 1978, Pat. No. 4,187,638. This application Dec. 11, 1979, Ser. No. 102,532

The portion of the term of this patent subsequent to Feb. 12, 1997, has been disclaimed.

Int. Cl.[4] A01N *5/00*

U.S. Cl. 47—1.5 **8 Claims**



1. Apparatus for applying a chemical to plants comprising

a reservoir comprising an elongated hollow body having an interior and an exterior, and means for closing each end of the body;

said reservoir having a first opening and a second opening spaced from said first opening, said openings being in opposite ends of said reservoir and generally axially aligned with each other;

wick means for applying the chemical to plants and comprising a rope wick having opposite ends thereof in fluid communication respectively with said reservoir, through said openings, and having an exposed portion between said ends extending along the outside of said body;

seal means for peripherally sealing said wick with respect to said reservoir at a first location between said exposed portion and one of said ends of the wick;

said means for peripherally sealing said wick with respect to said reservoir at a second location between said exposed portion and the other of said ends of the wick; and

additional means for containing the chemical and connected to reservoir for supplying the chemical to the reservoir.

4,553,351

METHOD OF TREATING A SOIL

R. Edgar Guay, Sillery, Canada, assignor to Ministere de l'Energie et des Ressources, Quebec, Canada

Filed Mar. 8, 1983, Ser. No. 473,253

Claims priority, application Canada, Jul. 21, 1982, 407735

Int. Cl.[4] A01B *79/00*; **A01G** *1/00*

U.S. Cl. 47—58 **6 Claims**

1. In a method of treating a soil by surface composting, particularly for maintaining or increasing the percentage of organic matter in the soil, said method being of the type wherein the soil to be treated is first plowed, then spread with a fresh organic matter and thereafter harrowed to incorporate the organic matter into the soil at a shallow depth, the improvements wherein:

a layer of shredded forest residual products selected from a class consisting of wood chips and shredded brushwood is uniformly spread over the surface of said plowed soil;

an effective amount of liquid manure is spred uniformly over the shredded forest residual products after they have been spread over the soil but before the soil is harrowed; and

the amount of liquid manure uniformly spread over the shredded forest residual products is sufficient to obtain a mixture having an homogeneous carbon to nitrogen ratio not exceeding 30:1 whereby harrowing said shredded forest residual products in admixture with said liquid manure into the soil to said shallow depth causes decomposition of the admixed forest residual products and manure concomitant to the growing of a crop.

4,553,352

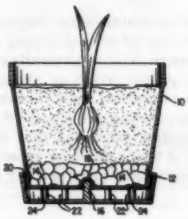
PLANT CONTAINER FOR DRAINING MOISTURE FROM THE SOIL

Bert R. Powell, Jacksonville, and Albert L. Collins, Frankston, both of Tex., assignors to Texas Processed Plastics, Inc., Jacksonville, Tex.

Filed Feb. 10, 1984, Ser. No. 579,032

Int. Cl.[4] A01G *9/02*

U.S. Cl. 47—71 **10 Claims**



1. A plant container for containing soil and plants, comprising:

a main container for containing the soil and plants and having a plurality of drainage orifices disposed in the bottom thereof;

a reservoir tray disposed under said main container for receiving fluids passing through said orifices, said reservoir tray spaced a predetermined distance from said orifices;

means for selective fluid communication of said orifices to the exterior of said reservoir tray to facilitate flushing of sediments from the soil;

said fluid communication means comprises a plurality of conduit members connected to said reservoir tray, said reservoir tray moveable with respect to said main container with each of said conduit members mating with one of said orifices such that selective movement of said reservoir tray aligns each of said conduit members with a respective one of said orifices to allow the fluid to flow therethrough to the exterior of said reservoir tray.

4,553,353

LATCH FOR PIVOTAL SASH WINDOW

Harold Simpson, Chicago, Ill., assignor to Ashland Products Company, Chicago, Ill.

Filed Apr. 20, 1984, Ser. No. 602,386

Int. Cl.[4] E05D *15/22*

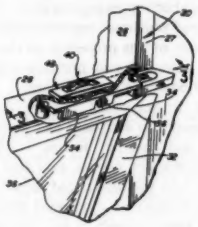
U.S. Cl. 49—161 **7 Claims**

1. In a pivotal-type window sash adapted for installation in the master jamb frame of a double-hung window assembly having opposed, vertically extending guide rails to enable vertical reciprocal sliding movement of the sash in the master jamb frame while cooperatively engaged with the guide rails, the sash having a header, a base and a pair of stiles cooperatively connected together at adjacent extremities thereof to form a miter-jointed, rectangular sash frame; a latch mechanism adapted to be operatively installed internally of the sash frame to said header, albeit manually operable from externally of the sash frame for releasing the latch mechanism to permit pivotal movement of the window sash, said latch mechanism comprising:

A. a housing having a planar upper wall, a depending boss

formation at opposite ends of said wall having a bore therein opening to the upper surface of said planar wall, and opposing said wall formations depending from said planar wall along opposite longitudinal edges of the planar wall, a pair of said side wall formations having flange formations at the extremities thereof;

B. a latching bolt slidably installed in said housing between said side wall formation supported on said flange formations below said planar wall, said bolt having an end segment protruding beyond an end of said housing for engaging in a guide rail for releasably locking the said frame against pivotal movement relative to the master jamb frame, the bolt being installed under spring tension normally urging said end segment into locking position relative to a guide rail;



C. a control member having depending post means connected through said planar wall to said latch bolt for manually sliding the bolt against said spring tension for retracting said end segment from a guide rail;

D. said housing adapted to be secured to an interior surface of said header by fastener means extending through the header into said bores of the boss formations and said end segment of the latch bolt extending through a passageway in a stile into operative engagement with a guide rail;

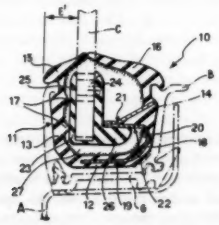
E. said control member adapted to be connected to the latch bolt externally of the header by means of said post means extending through the header, the control member being slidable on the header for releasing the latch bolt.

4,553,354

GUIDE DEVICE FOR SLIDING WINDOWS OF MOTOR VEHICLES AND A METHOD FOR ITS MANUFACTURE

Mario Barbero, Turin, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed May 25, 1984, Ser. No. 614,100
Claims priority, application Italy, May 26, 1983, 67588 A/83
Int. Cl.⁴ E05D *15/16*; E06B *7/16*
U.S. Cl. 49—431 **2 Claims**



1. A guide device for sliding windows of motor vehicles, comprising a channel-shaped weather strip fixed to the motor vehicle body along one side of the window and having two side walls and a base wall, a rigid core, and a pair of converging lips which cooperate with opposite surfaces of the glass, and a runner fixed to an edge of the glass and cooperating slidingly with the rigid core of said weather strip,

wherein the improvement consists in:

said rigid core being at least partially embedded in the body of said weather strip and having first and second limbs which extend respectively in correspondence with the base wall of said weather strip and that side wall of the weather strip facing inwardly of the motor vehicle;

said second limb having an appendage which faces inwardly of the weather strip and as its free end aligned approximately with the longitudinal median plane of the weather strip;

said lips of the weather strip converging at zone which lies in a plane intermediate the said longitudinal median plane and that side wall of the weather strip facing outwardly of the motor vehicle, and

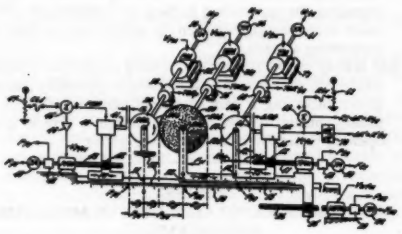
said runner being L-shaped and including a first arm connected to the glass and a second arm cooperating slidingly with the surface of said appendage facing said first limb of the core, whereby the first arm of said runner cooperates slidingly with the side wall of the weather strip facing outwardly of the vehicle.

4,553,355

GRINDING CONTROL METHODS AND APPARATUS

Roderick L. Smith, Rockford, Ill., assignor to Energy-Adaptive Grinding, Inc., Rockford, Ill.

Division of Ser. No. 249,192, Mar. 30, 1981, abandoned. This application Feb. 15, 1984, Ser. No. 580,194
Int. Cl.⁴ B24B *49/18*
U.S. Cl. 51—165.87 **78 Claims**



1. The method of grinding the work surface of a workpiece with a rotationally driven grinding wheel, said method comprising

(a) feeding the grinding wheel face relative to the work surface and with relative rubbing contact to create grinding action,

(b) simultaneously with procedure (a) feeding the operative surface of a conditioning element relative to the wheel face and with relative rubbing contact to create dressing/truing action which reduces the wheel radius at a rate greater than such reduction rate caused by the grinding action, and

(c) conjointly controlling and varying the relative feed rate and the relative surface velocity of said truing/dressing action to vary and maintain the condition of the wheel face.

4,553,356

RAINWATER GUTTER SEALING ARRANGEMENT

Kenneth V. Pepper, Elkhart Lake, Wis., assignor to Bemis Manufacturing Company, Sheboygan Falls, Wis.

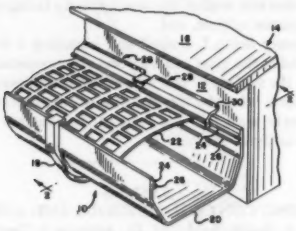
Filed Mar. 8, 1984, Ser. No. 587,705
Int. Cl.⁴ E04D *13/06*
U.S. Cl. 52—11 **5 Claims**

1. A sealing arrangement for a rainwater gutter positioned

generally adjacent to an associated supporting surface of a structure, wherein the gutter includes at least one rib on the inwardly facing surface of an upper edge portion thereof, the sealing arrangement comprising:

elongated, unitary sealing means comprising a single extrusion adapted to span a gap between the gutter and the supporting surface,

said sealing means comprising means for joining said sealing means to the upper edge portion of the gutter including a generally downwardly opening groove for receiving the gutter edge portion, and means for retaining the gutter edge portion in said receiving groove comprising retaining rib means extending generally into said groove for



coacting with the gutter rib to urge said groove open and thereby effect a snap-fit of said sealing means to said upper edge portion,

said sealing means further comprising sealing lip means extending integrally from said joining means for sealingly engaging the supporting surface to substantially prevent water from passing between the gutter and the associated supporting surface,

said sealing means further comprising means for holding an associated screen in a position which generally spans the gutter including a pair of screen ribs provided on said joining means which together define a screen groove opening generally inwardly of the gutter.

4,553,357

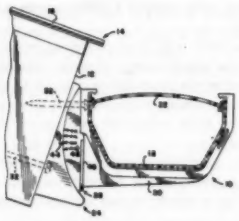
ADJUSTABLE RAINWATER GUTTER MOUNTING ARRANGEMENT

Kenneth V. Pepper, Elkhart Lake, Wis., assignor to Bemis Manufacturing Company, Sheboygan Falls, Wis.

Filed Mar. 8, 1984, Ser. No. 587,451

Int. Cl.⁴ E04D *13/00*

U.S. Cl. 52—12 **5 Claims**



1. A mounting arrangement for adjustably mounting a rainwater gutter on an associated supporting surface, comprising:

adjustable mounting means adapted for positioning generally between the gutter and the supporting surface, said mounting means being configured for maintaining the gutter in any one of a plurality of angular dispositions with respect to the supporting surface, whereby the gutter can be mounted in a generally horizontal disposition when the supporting surface is disposed at an angle to the vertical,

said mounting means comprising a base portion configured to abut the supporting surface, and a pad portion configured to mate with and abut said base portion in any one of a plurality of relative angular positions, said pad portion being separate from said gutter,

said base portion and said pad portion respectively defining generally arcuate, complemental mating surfaces configured for abutting engagement in said plurality of relative angular positions of said base and pad portions, said mating surface of said base portion being outwardly facing relative to said supporting surface, said mating surface of said pad portion being inwardly facing relative to said supporting surface, whereby said pad portion of said mounting means is movable in a direction toward said base portion and the supporting surface to bring said mating surfaces into abutting engagement,

said base and pad portions comprising interengaging means including tooth means provided on the mating surface of one of said base and pad portions engageable with the other of said base and pad portions,

said mounting arrangement further comprising bracket means configured to abut said pad portion and to receive the gutter, and fastener means configured to extend through said bracket means, said pad portion, and said base portion into the associated supporting surface, said base portion defining an elongated opening for receiving said fastener therethrough in any one of said plurality of relative angular positions of said base and pad portions.

4,553,358

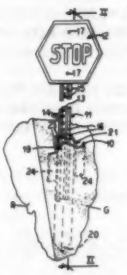
POST ANCHOR

Robert F. Deike, Cheyenne, Wyo., assignor to Construction Robotics, Inc., Chicago, Ill.

Filed Sep. 6, 1984, Ser. No. 648,039

Int. Cl.⁴ E02D *5/74*

U.S. Cl. 52—98 **14 Claims**



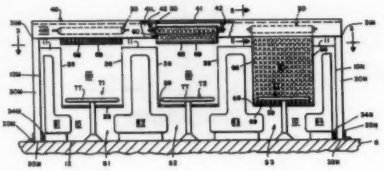
1. A ground anchor for channel highway sign posts of the type having a web and side legs which comprises an angle leg having sides and an apex corner with a leading end for driving into the ground and a trailing end, an upright fin forming shroud strip embracing the apex corner and sides at the trailing end of the leg secured to the ends of the sides forming a V-shaped socket for receiving a channel post with the ends of the legs of the channel post bottomed on the sides, and a compression member in the socket bottomed on the strip pressing the legs of the channel post against the sides causing the legs of the post to spread apart and be placed under tension as they are locked in the socket.

4,553,359

CONVERTIBLE RESTAURANT SEATING

Robert S. Potter, 661 N. 50th St., Omaha, Nebr. 68132

Filed Sep. 21, 1983, Ser. No. 534,482
Int. Cl.[4] E04H 3/00
U.S. Cl. 52—173 R 3 Claims



1. In a restaurant environment including at least one row of plural seating stations extending uprightly from restaurant flooring and consecutively along a longitudinal-axis, said row being laterally delineated by leftward and rightward flooring aisles having a finite lateral-width therebetween, respective seating stations comprising three laterally extending components supported upon said flooring and including a pair of facing bench means and an intervening table with horizontal tabletop, the improvement wherein every one of said respective seating stations is individually convertible into selectable laterally extending widths of full and partial lateral-width whereby a seating station might be alternatively employed for a larger dining group utilizing full lateral-width and both aisles or two smaller dining groups utilizing closed-off subparts of the finite lateral-width and a single aisle, and said convertible restaurant seating comprising:

A. stationary partition means extending uprightly from the restaurant flooring and along a vertical-plane located substantially halfway between said flooring aisles whereby said partition means divides the benches means and tabletop components of every seating station into substantially equal leftward and righward laterally extending seating zones, said partition means having a longitudinally extending and fixed elevation upper-edge overlying the tabletops, and said partition means in lateral registry with every seating station at the tabletop component being provided with a cutout view-way extending downwardly from the partition upper-edge, each said partition view-way having a pair of parallel vertical-edges and a horizontal base-edge located below the tabletop;

B. a longitudinally extending and fixed elevation beam of inverted-U cross-sectional shape maintained in overlying relationship to all of said partition view-ways; and

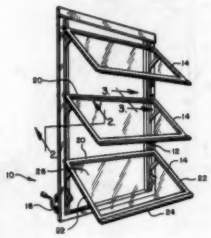
C. individually actuatable closure means for every one of the partition view-ways whereby individual seating stations are convertible by said closure means between full lateral-width for a larger dining group and two closed-off subparts of said lateral-width for two smaller dining groups, each said closure means comprising a longitudinally extending roller carried within said beam and overlying a partition view-way, said roller being convolutely wrapped with a flexible non-transparent sheeting material that may be temporarily downwardly withdrawn from the roller to close-off the partition view-way therebelow, and the sheeting in temporarily downwardly withdrawn condition comprising a pair of parallel vertical-borders lying contiguously along the view-way vertical-edges and further comprising a horizontal leadward-border lying contiguously along and including fastener means for removable attachment to the partition view-way base-edge.

4,553,360

AWNING TYPE WINDOW FRAME FOR INSTALLING EITHER RIGID GLAZING PANE OR FLEXIBLE GLAZING SHEET

Charles D. Colombo, 1238 Forsythe Dr., North Fort Myers, Fla. 33903

Filed Jul. 18, 1983, Ser. No. 514,527
Int. Cl.[4] E04B 1/00; A47H 13/00
U.S. Cl. 52—202 21 Claims



1. An awning window frame adapted alternately to support a rigid glazing pane and to cooperate with at least one spline to support a flexible glazing sheet, said frame comprising:

a generally C-shaped upper frame member defining an upper support shelf and an upper sealing lip, spaced from and overlying the upper support shelf;

two generally Z-shaped side frame members, each defining a respective side support shelf and a respective side sealing lip;

a generally Z-shaped lower frame member defining a lower support shelf and a lower sealing lip;

said side frame members secured to the upper and lower frame members to surround a central opening, such that the side support shelves are aligned with the upper and lower support shelves to form a perimeter shelf adapted to contact and suport a perimeter portion of said rigid glazing pane, and the lower sealing lip is aligned with the side sealing lips to form a perimeter sealing lip, extending around outside portions of the side and lower frame members, adapted to seal the side and lower frame members to an adjacent structure;

each of said frame members further comprising means for defining a channel extending parallel to the respective glazing shelf such that said channels extend substantially around the perimeter shelf, each of said channels sized to receive and engage said at least one spline and a peripheral portion of the flexible glazing sheet to secure said flexible glazing sheet to the frame members, each of said channels defining a spline-retaining wall extending transversely to the respective glazing shelf to prevent movement of the spline toward the central opening.

4,553,361

TIERED DRAIN CHANNEL FOR EXTRUDED DOOR INSERT

James L. Ralph, Shoreview, Minn., assignor to Cole Sewell Corporation, St. Paul, Minn.

Filed Jul. 5, 1984, Ser. No. 627,825
Int. Cl.[4] E06B 7/14, 3/46
U.S. Cl. 52—209 8 Claims

1. An extruded channel frame member forming a core insert for a door structure, comprising

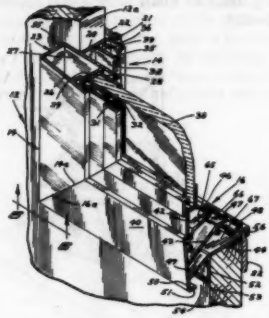
a substantially rectangular frame member having the facing portion thereof projecting outwardly of said door structure,

the bottom segment of said frame member having a plurality of vertically spaced tiers therein extending inwardly of said frame from the inner side of said facing portion,

said tiers having their inner edge portions and their end portions in stepped relation,

a sash receiving track formed between said facing portion and the inner edge of the uppermost of said tiers,

sash receiving tracks formed within the vertical spacing between adjacent stepped pairs of said edge portions,



vertical drain passages formed between said stepped end portions of said tiers and the respective adjacent vertical end walls of said frame member,

an open bottom channel depending from the lowermost of said tiers, and

drainage holes to the atmosphere through said channels formed between the ends of said last mentioned tier and said adjacent end walls.

4,553,362

PREFABRICATED BUILDING UNITS

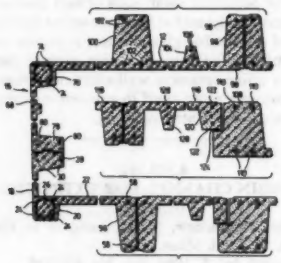
Victor Riley, Mississauga, Canada, assignor to Imperial Oil Limited, Toronto, Canada

Filed Jan. 17, 1983, Ser. No. 458,392

Claims priority, application Canada, Jan. 19, 1982, 394414

Int. Cl.⁴ E04H *1/00*; E04B *1/04*

U.S. Cl. 52—236.3 **11 Claims**



1. A prefabricated building unit comprising an integrally moulded body of fibre-reinforced concrete, said body having a wall portion, a beam portion extending along the top of the wall portion, and a roof portion extending from the beam portion perpendicularly to the wall portion at the top thereof, said beam portion being reinforced by reinforcing bars extending therealong and an elongated reinforcing member extending helically around the reinforcing bars to minimize the moment of the roof portion.

4,553,363

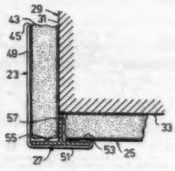
OUTSIDE WALLBOARD CORNER CONSTRUCTION AND EDGING MEMBER FOR SAID CORNERS

Roger N. Weinar, 19 Parkside Ave., Hamburg, N.Y. 14075

Filed Sep. 23, 1982, Ser. No. 421,826

Int. Cl.⁴ E04B *1/00*; E04C *3/30*

U.S. Cl. 52—288 **9 Claims**



1. An outside longitudinal corner construction of wallboard panels which comprises a longitudinally extending framing member having first and second surfaces at about a right angle to each other and extending in the direction of the corner, a pair of wallboard panels, each having core portions covered by cover fabrics or sheets, and an edging member which extends longitudinally in the direction of the framing member and is held to it, directly or indirectly, along its length, said edging member being essentially T-shaped in cross-section or having a part thereof which is essentially T-shaped in cross-section, with a post section and a cross-bar section, said post section or an extension of it being held directly or indirectly to the framing member, a first part of the cross-bar extending from the post in a direction a distance from the first surface of the framing member about the thickness of a wallboard and a second part of the cross-bar extending in an opposite direction from the post, with both cross-bar sections being at a distance from the second surface of the framing member or an extension of the plane thereof about equal to a wallboard thickness plus a wallboard cover thickness, the first wallboard panel being held to the first surface of the framing member and near or against the first part of the edging member cross-bar, with a cover fabric or sheet thereof, which extends beyond said wallboard and said cross-bar, as a flap, being wrapped about the cross-bar, and with the second wallboard panel having a side thereof positioned between the second cross-bar and the second framing member surface and adjacent the edging member post, and holding the cover fabric or sheet of the first wallboard panel in position between the second cross-bar part and the second wallboard panel.

4,553,364

WINDOW SASH AND FRAME MOLDED OF FIBROUS MATERIAL

Wesley E. Legg, Bexley; Russell L. Ault, Newark; Richard A. Mott, Alexandria, and Alan R. Leewood, Newark, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

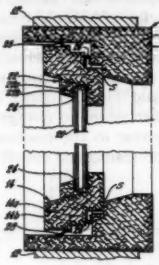
Continuation of Ser. No. 452,665, Dec. 23, 1982,. This application Nov. 19, 1984, Ser. No. 672,851

Int. Cl.⁴ E04C *1/00*

U.S. Cl. 52—309.13 **6 Claims**

1. A window comprising a generally rectangular frame and a generally rectangular sash therein, the frame and sash each having straight top, bottom, and opposite side members, each of said members being made of glass wool impregnated with a binder, the binder-impregnated glass wool having a density of less than twenty pounds per cubic foot, each of said members

having resin in addition to the binder incorporated in outer surface portions thereof and completely around its cross-sectional periphery, and each of said members being visually solid in cross section.

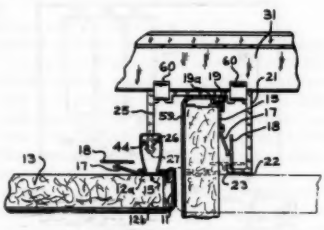


4,553,365

SUPPORT SYSTEM FOR CEILING AND WALL PANELS

Bradley L. Bechstein, Toledo, Ohio, assignor to Tibbet Incorporated, Toledo, Ohio

Filed Sep. 30, 1983, Ser. No. 537,523
Int. Cl.[4] E04B 5/52
U.S. Cl. 52—483 7 Claims



1. In combination in a panel support system framed panels each having a frame about the panel media, an inwardly projecting overlying support ledge portion for support of at least one side on each such panel, a bracket securable to an overlying support structure, such bracket having at least one leg shaped with a laterally projecting portion having an upwardly extending component at its end for engagement in underlying relation with the ledge portion of a frame of a panel for hanging support of said panel from above said panel whereby the panel can be supported at said one side of the panel by two or more brackets in any of a number of orientations of the panel from vertical to horizontal.

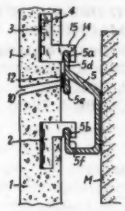
4,553,366

FIXATION DEVICE FOR AN ARTIFICIAL STONE PLATE FACING ON A WALL STRUCTURE

Gabriel Guerin, 49350 Gennes, France

Filed Feb. 22, 1983, Ser. No. 468,632
Claims priority, application France, Feb. 25, 1982, 82 03362
Int. Cl.[4] E04B 1/38
U.S. Cl. 52—487 2 Claims

1. A fixation device of a facing made of artificial stone plates on a wall structure, comprising plates provided with two series of metallic hooking means extending along lines parallel to the top and bottom edges of said plates, said metallic hooking means comprising sections with a base embedded in the artificial stone plate when said plate is being cast, the hooks of said means having a hooking part facing downwardly and supporting elements to be fixed to the wall formed of sections disposed horizontally and extending over the whole width of the wall, said sections having two parallel horizontal hooking edges turned upwardly, the hooks of the metallic hooking means being so formed as to cooperate with said hooking edges and the section comprising, from its upper hooking edge, a wing



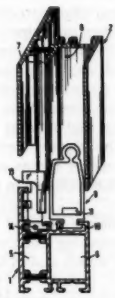
the height of which is greater than the spacing between the hooking part of the lower hooking means and the lower edge of the plate, so that said wing extends behind the top edge of the plate hooked on the lower hooking edge of the same section.

4,553,367

FRAME FOR A DOOR OR WINDOW WITH AT LEAST ONE BRACE MANUFACTURED FROM HOLLOW, PREFERABLY HEAT-INSULATED COMPOSITE SECTIONS

Jean-Paul Redien, Hiddenhausen, Fed. Rep. of Germany, assignor to Schuco Heinz Schurmann GmbH & Co, Bielefeld, Fed. Rep. of Germany

Filed Jan. 9, 1984, Ser. No. 569,018
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1983, 3302162
Int. Cl.[4] E04C 2/38
U.S. Cl. 52—656 4 Claims



1. In a frame for a door or window having frame sections, at least one brace, wherein the frame sections and brace comprise hollow sections with channels therein and a T connector connecting one end of the brace and an intermediate portion of a frame section together at a butt joint, the improvement wherein: each frame section has two parallel longitudinally extending channels and the brace has an inner space therein, with the T connector engaging one channel of the frame section and extending into the inner space of the brace without filling same; a filler member positioned at the butt joint and having a first portion that matches the contours of and is slidably received in the other channel in the frame section and a second portion slidably received in the inner space of the brace section, wherein the first portion of the filler member has a bore therein extending parallel to the other channel and receptive of a sealant when the frame section and brace are con-

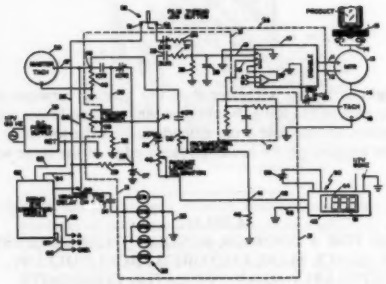
nected and the second portion includes a slot perpendicular to the bore and in communication therewith, whereby sealant forced into the bore flows into the slot and seals off the butt joint.

4,553,368

FINWHEEL SERVO DRIVE FOR PACKAGING MACHINE

Robert E. Ziller, New Richmond, Wis., assignor to Doboy Packaging Machinery, Inc., New Richmond, Wis.

Filed Nov. 12, 1982, Ser. No. 440,853
Int. Cl.[4] B65B 57/00
U.S. Cl. 53—51 **4 Claims**



1. In an automatic article wrapping machine of the type including a supply roll of wrapping film, in-feed conveyer means adapted to be driven at predetermined adjustable rates by first electrical motor means for advancing the articles to be wrapped to a film forming station, means at said film forming station for forming said film into a tubular configuration about said articles, a pair of finwheels mounted for rotation about parallel vertical axes, the spacing between said axes being only slightly greater than twice the radii of said finwheels for gripping apposed longitudinal edge portions of the wrapping film and drawing said film from said supply roll and through said film forming station while creating a longitudinal seal between said apposed edges, and cyclically operable end-sealing and cut-off means disposed downstream of said pair of finwheels and transverse to the direction of flow of the entubed articles for sealing and severing said tube at predetermined spaced longitudinal locations, the improvement comprising:

(a) second electrical motor means separate from said first electrical motor means coupled in driving relation to said pair of finwheels;

(b) first tachometer means coupled to said first electrical motor means for producing a first electrical signal proportional to the rate at which said in-feed conveyer means is driven;

(c) second tachometer means operatively coupled to at least one of said pair of finwheels for producing a second electrical signal proportional to the angular velocity of said one of said pair of finwheels;

(d) servo amplifier means having input means and output means, said input means being coupled to receive said first electrical signal and said second electrical signal, said second electrical signal being in phase with said first electrical signal;

(e) means connecting said second electrical motor means to said servo amplifier output means to change the speed of said finwheels in response to the speed of said infeed conveyor;

(f) first photo-optic means for sensing the passage of fiducial marks on said film past a fixed reference point and producing a first pulse signal indicative thereof;

(g) second photo-optic means for sensing the disposition of said end-sealing and cut-off means and producing a second pulse signal during a predetermined portion of the operating cycle of said end-sealing and cut-off means;

(h) logic means coupled to said first and second photo-optic means for producing a third electrical signal when said first pulse signal occurs before said second pulse signal and a fourth electrical signal when said first pulse signal occurs after said second pulse signal; and

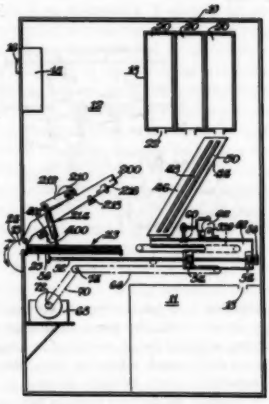
(i) means coupling said third and fourth electrical signals to said servo amplifier means to change the speed of said finwheels in response to the positions of said fiducial marks and said end-sealing and cut-off means.

4,553,369

AUTOMATIC CONTROL SYSTEM FOR X-RAY FILM CASSETTE LOADER AND UNLOADER APPARATUS

Michael H. Debes, Bear, and Paul C. Keenan, III, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 18, 1983, Ser. No. 553,468
Int. Cl.[4] B65G 65/04
U.S. Cl. 53—55 **4 Claims**



1. In an apparatus for automatically unloading exposed X-ray film from a cassette and reloading the cassette with unexposed film having a light-tight chamber having means for insertion and withdrawal of the cassettes; a film-holding magazine rack adapted to hold a plurality of film-holding magazines, each containing unexposed X-ray film sheets of a predetermined size, means to release on demand from one of the magazines a single sheet of predetermined size and/or type film; cassette-opening means to open the cassette, removing means to remove an exposed film from the open cassette, transfer means to transfer a sheet of film from one of the magazines to the open cassette, closing means to close the cassette, and control means responsive to a control signal to selectively actuate the release means, cassette opening means, film removing means, transfer means and closing means, the improvement comprising:

indicia on the cassette denoting operations to be performed, based on film size and/or type, and/or the film therein; and

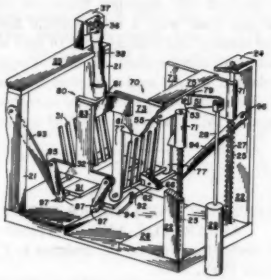
means for sensing the indicia and providing the control signal in response thereto to the control means.

4,553,370

BAG FOLDER, TRANSPORTER AND CARTON LOADER HAVING IMPROVED LOADING AND STOMPER MECHANISM

Thomas L. Anderson, Webster, and F. John Herrington, Holcomb, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 10, 1983, Ser. No. 521,804
Int. Cl.[4] B65H 45/00
U.S. Cl. 53—117 27 Claims



1. An apparatus for sequentially folding and loading a plurality of thin, limp, sheet-like articles in a carton therefor, comprising:

a folding station, comprising:

a pivotal platform biased to a first predetermined position, to which each said article is sequentially delivered; and

a folding means, which is in standby position and alongside said platform when said article is delivered onto said platform, for sequentially folding at least one portion of said article onto another portion thereof; and

a loading assembly for sequentially loading each said folded article into said carton, said carton having a bottom which is aligned with and transversely spaced from said folded article on said platform, said loading assembly comprising:

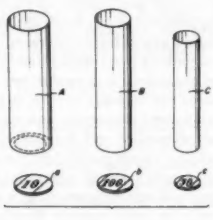
a propulsion means for pivotally moving said platform against said biasing to a second predetermined position, which permits movement of said folded article into said carton, and for propelling a folded article into said carton, and thereafter allowing said platform to return to said first position.

4,553,371

COIN CRIMPER

Yoshitsune Iitsuka, Yokohama, Japan, assignor to Nippon I.C.S. Co., Ltd., Osaka, Japan

Filed Feb. 14, 1984, Ser. No. 580,548
Int. Cl.[4] B65B 7/02
U.S. Cl. 53—285 7 Claims



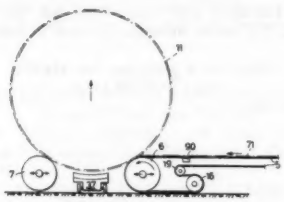
1. A coin crimper for curling open end edges of packages with coins packed therein, said crimper including a package receiving opening, curling means for curling the open end edges of the packages inserted in said opening and driving means for rotatively driving said curling means, said coin crimper comprising package receiving opening diameter changing means for changing a diameter of said package receiving opening depending upon kinds of coins and hence packages of the coins, and curling position changing means for changing a curling position where the open end edges of the packages are curled depending upon the coins, thereby enabling packages of coins having different diameters to be curled by the single coin crimper, said package receiving opening diameter changing means comprising a plurality of pressure cores forming at their insides a substantially circular opening for receiving said open ends of the packages, each of said pressure cores being supported by a rockable arm and having a roller, said rockable arm being pivotally supported relative to the crimper and urged in one direction by spring means and a cam plate rotatable about said package receiving opening and fixed at predetermined positions and having inner peripheral cam surfaces each contacting said roller of said pressure core, thereby changing a diameter of said circular opening formed by said pressure cores when said cam plate is rotated to move said pressure cores into positions determined by said inner peripheral cam surfaces of the cam plate and said rollers of said pressure cores.

4,553,372

PLANT FOR WRAPPING THE ENVELOPE SURFACE OF A PREFERABLY CYLINDRICAL ARTICLE

Karl J. Back, Upplands Väsby, Sweden, assignor to Stretch Emballering AB, Upplands Väsby, Sweden

Filed Oct. 12, 1983, Ser. No. 541,234
Claims priority, application Sweden, Oct. 20, 1982, 8205968
Int. Cl.[4] B65B 11/56, 53/00
U.S. Cl. 53—411 20 Claims



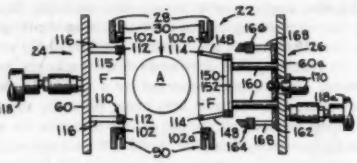
1. A plant for wrapping a preferably cylindrical article, including means for rotating the article relative to a supply of a web of wrapping material, means for winding the web about the article, means for applying an end of the material web to the article, means for keeping the web stretched during winding about the article, and means for parting the web at the end of a wrapping operation, comprising an endless belt arranged to run over two end pulleys and to lie in contact with a surface of the article, at a first end pulley with the other end pulley spaced from the article, the supply being arranged to carry the web-like material in the form of a coil, the supply including a roll movable away from and towards the belt for clamping the material web against the belt so that the web accompanies the belt, the web supporting portion of the belt extending substantially horizontally between the clamping roll and the article, said clamping roll normally being disposed spaced from the belt, the parting means including a slitting means disposed between the clamping roll and a zone of contact of the belt with the article and at a distance above a part of the belt facing towards the web.

4,553,373

METHOD AND APPARATUS FOR PACKAGING ARTICLES SUCH AS FRUIT

Veikko K. Viitanen, and William C. Kreamer, both of San Jose, Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Sep. 14, 1982, Ser. No. 418,126
Int. Cl.[4] B65B *11/50, 51/14*
U.S. Cl. 53—441 25 Claims



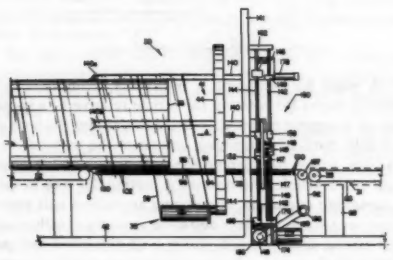
19. A method of packaging an article in a stretchable container formed from film portions comprising the steps of clamping each film portion when spaced from each other to define captured planar portions of film, placing the article between said captured planar film portions, moving the captured planar film portions toward each other for first engaging and then stretching the captured planar film portions over the article to conform the article contacting portions of the film closely to the peripheral shape of the article, clamping the two captured and conformed film portions together in a sealing plane for defining an annulus of contacting film which conforms closely to the peripheral shape of that portion of the article that lies in said plane and for defining an isolated annulus of each captured film portion outwardly of said annulus of said contacting film, and sealing and severing the film in said isolated annuluses adjacent said contacting annulus of film for providing a package which closely conforms to the shape of the article.

4,553,374

ROTATABLE FILM WRAPPING APPARATUS FOR CYLINDRICAL LOADS

William G. Lancaster, 5101 Upper River Rd., and Patrick R. Lancaster, III, 14801 Burleigh Ct., both of Louisville, Ky. 40223

Filed Jan. 3, 1983, Ser. No. 454,974
Int. Cl.[4] B65B *13/12*
U.S. Cl. 53—465 29 Claims



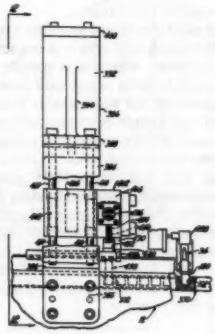
1. Apparatus for wrapping all surfaces of a cylindrical load comprising wrapping means, said wrapping means comprising a frame and a film dispensing means rotatably mounted on said frame, said film dispensing means when rotated defining a wrapping area, a wrapping conveyor assembly and tube forming support means located within said wrapping area, said wrapping conveyor assembly comprising at least one conveyor means adapted to transport said load and a film material dispensed by said film dispenser means, said film dispensing means being adapted to hold a roll of film material and wrap said film material around the load, said wrapping conveyor assembly and said tube forming support means; film stretching means mounted to said dispensing means engaging said film material to tension and stretch said film material being dispensed from said film dispensing means; take-off conveyor means spaced apart from said wrapping conveyor assembly; said wrapping conveyor means and said tube forming support means being adapted to transport said stretched film material wrapped around said conveyor and tube forming support means before, on and behind said load; said tube forming support means being adapted to support said stretched tensioned film web before and behind said load with a total surface area sufficient to cover planar leading and trailing ends of said load; and sealer means positioned downstream of said wrapping conveyor assembly adapted to seal said stretched film material before and behind said load so that said sealed stretched film material collapses against said planar leading and trailing ends of said load.

4,553,375

TRAY LOCATOR AND LOADER FOR CONVEYOR APPARATUS, AND METHOD

Raymond P. DeSantis, Troy, Mich., assignor to PTX-Pentronix, Inc., Lincoln Park, Mich.

Continuation-in-part of Ser. No. 465,166, Feb. 9, 1983,. This application Mar. 28, 1983, Ser. No. 479,142
Int. Cl.[4] B65B *5/08, 5/10;* B65G *47/52*
U.S. Cl. 53—475 22 Claims



1. An apparatus for transferring parts, comprising a first conveyor for carrying a single row of parts and travelling along a first axis of travel, a second conveyor having a receptacle and travelling along a second axis of travel at an angle to said first axis of travel, an insert disposed in said receptacle, said insert being provided with part-holding cavities disposed in consecutive parallel rows, each of said rows having a predetermined number of said part-holding cavities, a part pick-up and loading means disposed at a location where said first axis of travel and said second axis of travel intersect, said part pick-up and loading means picking parts sequentially at the end of said first conveyor for placement in a predetermined part-holding cavity in each row of part-holding cavities in said insert in said receptacle on said second conveyor, and means for locating said insert in said receptacle and for indexing each row of part-holding cavities and each part-holding cavity in each row of said insert, said locating means comprising a reciprocable ram disposed above said second conveyor, a support member attached to said ram for reciprocation thereby, a plurality of probe members each corresponding to one of said part-holding cavities in said insert mounted in a row below said support member such as to correspond to a row of said part-holding cavities in said insert, and means reciprocating said ram from a first position retracting said probe members from said part-

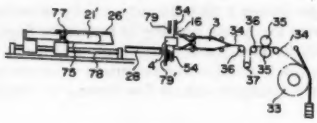
holding cavities to a second position introducing said probe members into said part-holding cavities.

4,553,376

AUTOMATIC CONTINUOUS VACUUM PACKAGING METHOD AND APPARATUS

Shingo Okada, Tokyo; Yuji Sawa, and Kuniomi Adachi, both of Fukushima, all of Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Division of Ser. No. 175,807, Aug. 6, 1980, Pat. No. 4,419,854. This application Aug. 9, 1983, Ser. No. 521,779
Claims priority, application Japan, Aug. 6, 1979, 54-99457
Int. Cl.⁴ B65B *31/02, 9/02*
U.S. Cl. 53—511 **7 Claims**



1. A vacuum packaging apparatus comprising:
receiving means for objects to be packaged;
means for supplying a flexible tubular film;
an opening core for opening said tubular film to a rectangular shape;
means for drawing an end of said tubular film over said opening core and over said object together with said receiving means;
electrode means for sealing said end portion of said film;
means for cutting said film into a segement of predetermined length;
suction means movable into a position above said receiver for applying suction to said film at upper end portions of both open and sealed ends thereof;
piston means cooperating with said receiver for moving said object into a position against said sealed end of said film;
first and second vacuum packaging means each having a vacuum chamber;
means for transferring said object with said film to one of said vacuum chambers;
means for tensioning both peripheries of said open end of said film to a rectangular shape so as to prevent the formation of creases during sealing in said vacuum chamber;
means for sealing said open end of said film in said vacuum chamber;
means for removing said object from said vacuum chamber;
means for horizontally moving said first and second packaging means.

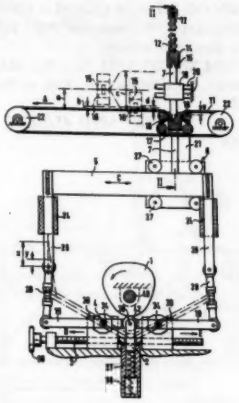
4,553,377

PACKAGING MACHINE WITH SEALING MEANS

Wolfgang Klinkel, Sala Capriasca-Bigorio, Switzerland, assignor to Eurobreva Engineering Trust, Lugano, Switzerland

Filed May 29, 1984, Ser. No. 615,082
Claims priority, application Switzerland, May 31, 1983, 2969/83
Int. Cl.⁴ B65B *9/12, 51/30*
U.S. Cl. 53—548 **6 Claims**

3. An adjustable machine for sealing tubular plastic film around products of varying heights, having
means (11) for conveying said product during the sealing process at a feed rate of said plastic film;
means having first (16) and second (15) jaws for sealing said plastic film;
means (6) for conjointly reciprocating said sealing means (15,16) from an initial position, along with each product during the sealing process, and back to said initial position;
comprising, in accordance with the invention,
means (13,44) connected to said reciprocating means (6) for adjusting the initial position of said second jaw (15) of said sealing means;
a frame (5) supporting said reciprocating means (6) and reciprocable in a plane orthogonal to the motion of said reciprocating means (6);
means (7,8,9) mounted on said reciprocating means (6) for translating reciprocation of said frame (5) into opening and closing motions of said sealing means (15,16) for effecting an equal and oppositely directed, with respect to



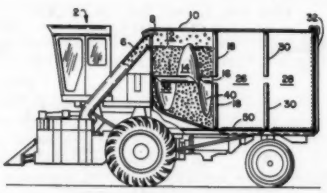
said products to be sealed, stroke of said first and second sealing jaws (16, 15);
and means (38, 3, 30) connected to said reciprocating means (6) for adjusting the length of the stroke of said sealing means (15,16) relative to each other as a function of the height of said product to locate the meeting zone of said first and second jaws (15,16) at a predetermined position with respect to the product and permit variation of said position as the height of the product changes.

4,553,378

ON BOARD COTTON MODULE SYSTEM FOR COTTON HARVESTING MACHINES

Robert M. Fachini, Naperville, and Jesse H. Orsborn, Clarendon Hills, both of Ill., assignors to J. I. Case Company, Racine, Wis.

Filed Jan. 17, 1984, Ser. No. 571,622
Int. Cl.⁴ A01D *46/08*
U.S. Cl. 56—16.6 **9 Claims**



1. A mobile cotton harvesting machine with on board cotton module system comprising:
a wheeled frame;
cotton harvesting means mounted on said frame adjacent the ground;
a receptacle mounted on said frame and having an inlet to receive cotton, said receptacle having a first section for receiving cotton and a second section for receiving the

cotton from said first section, said second section separated from said first section by a divider;

conveyor means to transport the cotton from said harvesting means to said receptacle; and

means for compression of cotton into a self-supporting cotton module, said means of compression being mounted within said receptacle.

4,553,379

METHOD AND APPARATUS FOR HARVESTING OF CORN OR OTHER GRANULAR FRUITS

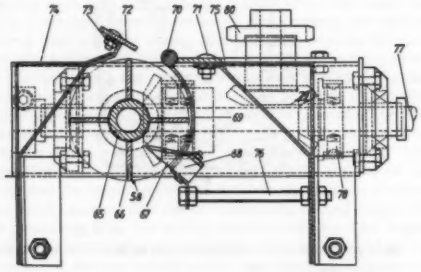
Klemens Kalverkamp, Warendorfer Str. 265, 4730 Ahlen/-Westf., Fed. Rep. of Germany

Filed May 12, 1983, Ser. No. 493,807

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1982, 3213542

Int. Cl.⁴ A01D *45/02*

U.S. Cl. 56—60 **13 Claims**



1. A method of harvesting granular fruits which are connected by stems to plant stalks and which grow in spaced rows in a field, comprising the steps of:

moving through the field while contemporaneously guiding each row of plants in a vertical orientation towards a respective fixed picking aperture;

grasping each plant of each row on only one side thereof as it enters the respective picking aperture; and

drawing each plant downwardly and pinching the same against the edge of the respective picking aperture to pluck and separate the fruit from the stalk at the stem.

4,553,380

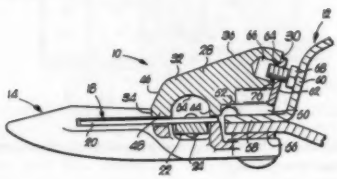
ADJUSTABLE HOLD DOWN FOR THE SICKLE OF A RECIPROCATING CUTTER ASSEMBLY

Michael L. O'Halloran, Hesston, Kans., assignor to Hesston Corporation, Hesston, Kans.

Filed Dec. 5, 1983, Ser. No. 557,878

Int. Cl.⁴ A01D *55/06*

U.S. Cl. 56—305 **14 Claims**



1. For use with a cutter bar having a plurality of spaced sickle guards secured thereto, extending forwardly therefrom and supporting a reciprocable sickle, a sickle hold down for overlying the sickle and including:

a body having means for attaching the same to the cutter bar;

a finger integral with the body and extending forwardly therefrom for overlying the sickle and terminating in a forward end; and

extensible means disposed for insertion between the cutter bar and the body behind the latter for biasing the finger downwardly toward the sickle,

said means for attaching the body to the cutter bar including a pair of wing extensions integral with the finger and projecting laterally outwardly from opposite sides thereof adjacent a rearward end of the finger,

said wing extensions each having a hole therethrough adapted to receive an elongated fastener for use in attaching the body to the cutter bar and for holding the wing extensions fixed against movement,

said finger having a thickness substantially exceeding that of the wing extensions whereby to permit the finger to rock slightly forwardly and downwardly relative to the wing extensions in an adjusting movement when the extensible means is extended without first loosing the fasteners.

4,553,381

CUCUMBER HARVESTER

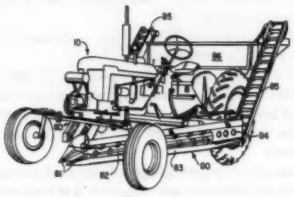
Bert Sonnenberg, R.R. #3, Waterford, Ontario, Canada (N0E 1Y0)

Filed Jul. 5, 1983, Ser. No. 511,031

Claims priority, application Canada, Oct. 22, 1982, 414012

Int. Cl.⁴ A01D *45/00*

U.S. Cl. 56—327 R **1 Claim**



1. A cucumber harvester adapted to be mounted on a tractor, comprising:

a pair of cooperatively shaped, spaced apart conical cucumber vine pick-up heads;

a pair of picker support and drive mechanisms;

a pair of pickers, the front end of each picker being secured to a respective pick-up head, said pickers diverging rearwardly from said pick-up heads to respective picker support and drive mechanisms, each said picker having a rotatable lower main auger and a rotatable top member cooperable with said main auger to pick cucumbers from vines without removing the vines from the earth, and having a trough extending along the bottom of said main auger to catch and retain cucumbers picked from vines, rotation of said main auger transporting cucumbers along said trough toward the rearward end of said picker;

means including said support and drive mechanisms for rotating said main augers and said cooperating members;

means for vertically adjusting said vine pick-up heads; and

cucumber conveying means for removing picked cucumbers from the rearward ends of said troughs.

4,553,382

DEVICE FOR PRODUCING TWIST-CRIMPED THREADS

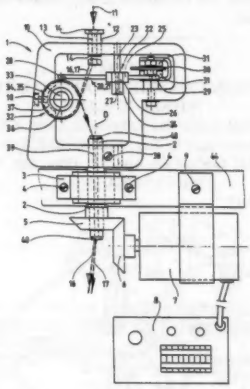
Gustav Brehm, Wettswil, Switzerland, assignor to Retech AG, Boniswil, Switzerland

Filed Sep. 16, 1983, Ser. No. 532,986

Claims priority, application Switzerland, Sep. 29, 1982, 5727/82

Int. Cl.⁴ D02G *1/02, 1/04*

U.S. Cl. 57—284 **18 Claims**



1. A thread separating head apparatus for producing separate twist-crimp threads from a twisting column where said threads are first heated, twisted in said twisting column, and subsequently cooled down, said head having a separation regulator comprising in combination:

a lever means which lies in a plane which is at a right angle to said twisting column for guiding said thread;

an undriven equalizing roller connected behind said lever when viewed in the running direction of said separate twist-crimped threads; and

means for damping the motion of said lever means.

4,553,383

METHOD OF AND APPARATUS FOR SPINNING YARN FROM STAPLE FIBERS IN AN AIR VORTEX

Stanislav Didek; Ludvik Fajt; Marketa Reymanova, and Marie Markova, all of Usti n.Orl., Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti n.Orl., Czechoslovakia

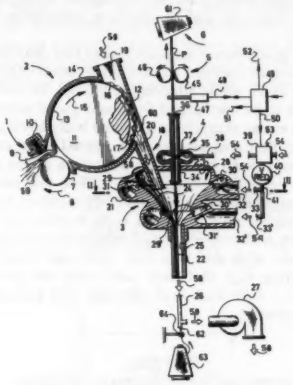
Filed Dec. 14, 1983, Ser. No. 561,546

Claims priority, application Czechoslovakia, Dec. 21, 1982, 9463-82

Int. Cl.⁴ D01H *1/13, 7/898*

U.S. Cl. 57—403 **9 Claims**

1. In a method of spinning yarn from staple fibers in an air vortex in a stationary spinning tube axially coupled to a stationary air chamber, by taking supplied individualized fibers onto an open yarn end engaging into the spinning tube which communicates with a sub-atmospheric pressure source, and from which the arising yarn is withdrawn by a take-off device in counter direction to the axial motion of an air vortex produced in the air chamber and directed toward its axis, the improvement wherein in the air chamber there is produced a funnel-shaped air vortex which is sucked off by the spinning tube and has an internal and an external air wall, and wherein individualized fibers are supplied in the air chamber onto one of said air walls of the air vortex which entrains, doubles and takes the fibers in the spinning tube onto the open end of yarn additionally twisted during the take-off in the region between the air chamber and the take-off device.



4,553,384

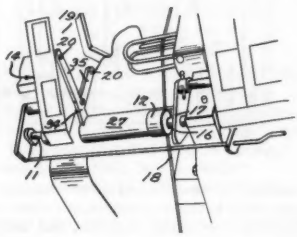
TAKE-UP SHAFT GUARD FOR OPEN-END YARN SPINNING MACHINE

Charles L. Crocker; Michael Wallace, both of Greensboro, and Lee Powell, Mooresville, all of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Dec. 18, 1984, Ser. No. 683,229

Int. Cl.⁴ D01H *1/12, 13/02*

U.S. Cl. 57—406 **22 Claims**



1. A guard adapted to be utilized with a take-up shaft and cot associated with an open-end yarn spinning machine, said guard comprising:

a tubular body member having first and second ends spaced from each other along a central axis of said tubular body member;

means defining a slot in said tubular body member, said slot extending axially the length of said tubular body member from said first to said second end thereof, and essentially parallel to said central axis;

means defining a cut-out in said tubular body member adjacent, but spaced from, said first end thereof, said cut-out elongated both circumferentially and axially and having circumferential and axial dimensions sufficient so that a cot of a yarn spinning machine may extend into contact with a shaft extending through the guard; and

a mounting bracket connected to said tubular body member adjacent said second end thereof, said mounting bracket extending in a plane generally transverse to said central axis.

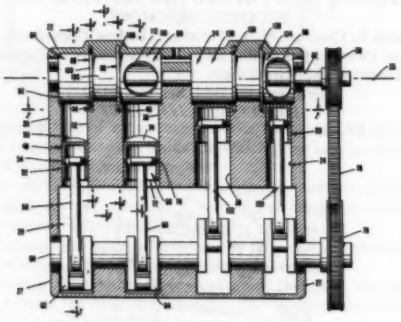
10. A combination comprising:
a take-up shaft of an open-end yarn spinning machine, rotatable about a first axis;
a cot rotatable about a second axis spaced from, but parallel to, said first axis, and in operative association with said shaft;
stationary guard means associated with said shaft and cot for preventing an operator from coming into contact with the rotating shaft, while allowing lint, trash, or the like from the shaft to be discharged from said guard means; and
said guard means comprising a tubular body having a central axis, and first and second ends spaced from each other along said central axis; means defining a slot in said body member extending generally parallel to said central axis; means defining a cut-out in said body member; and mounting means for mounting said body member so that it is stationary with respect to said shaft with said central axis concentric with said first axis, with said body member surrounding said shaft and with said cot in operative association with said shaft through said cut-out in said body member.

4,553,385

INTERNAL COMBUSTION ENGINE

John S. Lamont, 3-333 Broadway, Winnipeg, Man., Canada (R3C 0T1)

Filed Nov. 18, 1983, Ser. No. 553,083
Int. Cl.[4] F02G *3/02*
U.S. Cl. 60—39.6 **15 Claims**



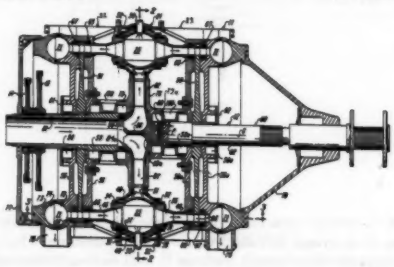
1. An internal combustion engine comprising:
an engine block having a compression cylinder, an expansion cylinder, a combustion chamber, and means providing fluid communication among the combustion chamber, the compression cylinder, and the expansion cylinder;
compression piston means for ingesting and compressing a gas, axially moveable in the compression cylinder;
expansion piston means for expanding and exhausting combustion products, axially moveable in the expansion cylinder;
rotary valve means for regulating gas ingestion, gas transfer to and from the combustion chamber, and gas exhaust, defining at least a partial closure for the compression cylinder and the expansion cylinder, and operable to selectively control the fluid communication means, wherein the rotary valve means includes
a rotationally symmetric inlet valve defining an end closure of the compression cylinder, and having an inlet port therein,
a first transfer valve including a first valve disc with a first transfer port operably positioned with respect to the fluid communication means to control flow from the compression cylinder to the combustion chamber,
a second transfer valve including a second valve disc with a second transfer port operably positioned with respect to the fluid communication means to control flow from the combustion chamber to the expansion cylinder, and
a rotationally symmetric exhaust valve defining an end closure of the expansion cylinder, and having an exhaust port therein;
means for supplying fuel to the gas compressed by compression piston means to create a combustible mixture;
means for igniting the combustible mixture; and
means for synchronizing movement of the compression piston means, the expansion piston means and the rotary valve means.

4,553,386

COMBUSTION CHAMBER FOR DUAL TURBINE WHEEL ENGINE

Martin Berg, 1544 Ames St., Lakewood, Colo. 80214

Continuation-in-part of Ser. No. 345,612, Feb. 4, 1982, abandoned. This application Apr. 17, 1984, Ser. No. 601,305
Int. Cl.[4] F02C *6/00*
U.S. Cl. 60—39.15 **20 Claims**



1. In a turbine engine, the combination comprising:
a pair of spaced turbine wheels rotatable about the same axis on a common shaft;
a Plurality of combustion chambers radially spaced about said axis between said turbine wheels, each said chamber having a hollow enclosed generally spherical body means having a center;
at least a pair of substantially straight exhaust outlet tube means extending radially outwardly from opposite side portions of the wall of said body means from said center for conducting the exhaust gas flow from the combustion chamber in opposite directions to said turbine wheels, the free end of the tube means having coupling means for attaching the tube means to a casing for the turbine wheels to provide a closed passageway for the exhaust gases, said exhasut outlet tube means lying generally in a single plane;
air inlet means connected to said body means, said inlet means being connected to a source of pressurized combustion air for said chamber,
said body means having at least one fuel nozzle mounted in the wall of said body means extending radially inwardly toward said center and connected to a source of pressurized fuel, a plurality of apertures formed through a generally semispherically shaped manifold section of the wall of said body means in a substantially uniformly arranged pattern surrounding said fuel nozzle, the outside surface of the body means encompassing the apertures to form an enclosed cavity which is connected to said air inlet means whereby combustion air flows continously through the apertures into the combustion chamber to mix with the fuel being continuously injected into the chamber by the fuel nozzle means: and
igniter means mounted through the wall of said body means and connected to a suitable source of energy for igniting the fuel-air mixture in the body means to provide a continuous flow of exhaust gases for driving the power turbine wheels simultaneously.

4,553,387

SUPERCHARGED INTERNAL COMBUSTION ENGINE WITH EXHAUST PARTICULATES FILTER

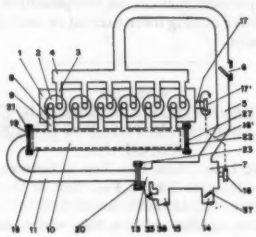
Andreas Mayer, Niederrohrdorf, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Aug. 9, 1982, Ser. No. 406,510

Claims priority, application Switzerland, Nov. 8, 1981, 5155/81

Int. Cl.⁴ F01N *3/02*

U.S. Cl. 60—274 **18 Claims**



1. A device for limiting exhaust particulate emission when supercharging internal combustion engines, comprising:

a pressure wave machine;

an air suction line means for delivering air to said pressure wave machine;

a charge air line means for delivering charged air from said pressure wave machine to said internal combustion engine;

a plurality of exhaust gas conduits leading from a cylinder head of an internal combustion engine to an exhaust gas system, said exhaust gas system including a high pressure portion communicating said cylinder head with said pressure wave machine and a low pressure portion downstream of said pressure wave machine, the high pressure portion including an exhaust gas receiver;

a briefly closable recirculation valve in said air suction line; and

an exhaust particulate filter arranged in the high pressure portion of said exhaust gas system upstream of the pressure wave machine whereby the brief closing of the recirculation valve in said air suction line briefly raises the temperature of the exhaust gas entering said filter so as to ignite and burn particulates collected at said particulate filter.

4,553,388

EXHAUST GAS PURIFICATION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Akira Okubo, Tokyo, and Seishi Miura, Shiki, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

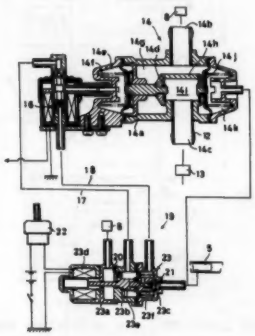
Filed Nov. 30, 1982, Ser. No. 445,514

Claims priority, application Japan, Nov. 30, 1981, 56-176614[U]; Dec. 8, 1981, 56-196236; Dec. 17, 1981, 56-202475; Dec. 17, 1981, 56-202480

Int. Cl.⁴ F01N *3/22*

U.S. Cl. 60—276 **15 Claims**

1. An exhaust gas purification apparatus in an internal combustion engine wherein an exhaust passage of an internal combustion engine is provided with a catalyzer for three components of an exhaust gas, an exhaust gas sensor, and a secondary air introducing opening so that the exhaust gas which is to be fed to the catalyst may be controlled to have a predetermined air-fuel ratio by introducing secondary air through the introducing opening in accordance with an output signal of the sensor; the apparatus further comprising an atompheric pressure passage, a negative pressure passage, and control means for biasing the air-fuel ratio of the exhaust gas away from the theoretical perfect air-fuel ratio in accordance with an operating condition of the engine; said control means including a control valve having a pressure chamber, said control valve being arranged to be controlled to open and close according to the output signal of the sensor and being interposed in the secondary air introducing passage connected to the introducing opening, an electromagnetic valve means having inlet means connected to said atomspheric pressure passage and said negative pressure passage and outlet means connected to said



pressure chamber, said electromagnetic valve means being responsive to said output signal of said sensor, and means for causing a delay in movement of the control valve in accordance with the operating condition of the engine; and means for causing a delay including a first orifice in said negative pressure passage, a second orifice in said atmospheric pressure passage, and means for selecting between said first and second orifices responsive to the operating condition of the engine.

4,553,389

HYDROSTATIC AUXILIARY STEERING APPARATUS

Werner Tischer, Heubach-Lautern; Karl-Heinz Liebert, Schwäbisch Gmünd, and Rolf Fassbender, Mutlangen, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 3, 1982, Ser. No. 404,697

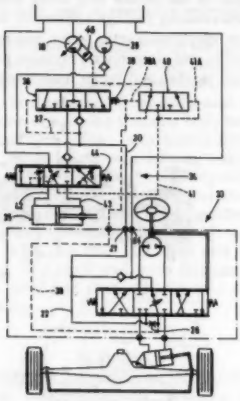
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132342

Int. Cl.⁴ B62D *5/08;* **F15B** *13/06, 13/09;* **F16H** *39/46*

U.S. Cl. 60—384 **10 Claims**

1. In a hydrostatic auxiliary power steering apparatus having a metering pump, a servomotor, a main pump, a reservoir from which fluid is drawn by the main pump and a fluid power steering circuit including a control valve displaceable from a neutral position in which flow through the metering pump is blocked; short-circuit passage means for recirculating the fluid from the main pump to the reservoir with increasing flow restriction in response to displacement of the control valve from the neutral position, a second constant volume pump, and a pressure passage to which the fluid pressurized by the main pump is conducted to the control valve, the improvement comprising a flow restrictor (**26**) disposed within the pressure passage (**22**) which has a fixed flow area less than that of the short-circuit passage means (**23**) in the neutral position of the control valve (**16**), branch passage means (**27**) connected to the pressure passage upstream of the flow restrictor for conducting the pressurized fluid to the servomotor (**17**) through the metering pump (**7**) in response to said displacement of the control valve from the neutral position, means responsive to a reduction in flow through the flow restrictor for unloading the main

pump and means (31) connecting the second pump (29) to the pressure passage in parallel with the main pump (18, 32) for



continuously conducting the pressurized fluid through the flow restrictor to the short-circuit passage means.

4,553,390

HYDROSTATIC STEERING ARRANGEMENT

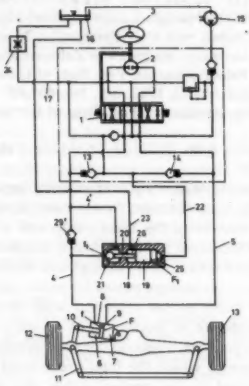
Karl-Heinz Liebert, Schwäbisch Gmünd; Werner Tischer, Heubach-Lautern, and Rolf Fassbender, Mutlangen, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Continuation of Ser. No. 391,606, Jun. 24, 1982, abandoned. This application Oct. 19, 1984, Ser. No. 662,700

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1981, 3126226

Int. Cl.[4] F15B *9/10*; B62D *5/06*

U.S. Cl. 60—384 **17 Claims**



1. In a hydrostatic steering system having a differential surface piston servomotor subject to displacement by an uncontrollable pressure head in a neutral flow circulating position of a steering control valve through which pressurized fluid is supplied to one of two opposed pressure chambers of the servomotor for steering operation in response to displacement of the steering control valve from the neutral position, the improvement including compensation valve means responsive to said pressure head for maintaining a constant ratio of pressures in the opposed pressure chambers in the neutral position of the steering control valve, and means responsive to said steering operation for conducting the pressurized fluid to the servomotor in by-pass relation to the compensation valve means, the compensation valve means establishing the constant ratio of pressures at a value to balance forces acting on the piston servomotor by having differential pressure faces (f_1, F_1) on which valve opening and closing forces are respectively exerted by pressures in the opposed pressure chambers (6, 7) of the servomotor (8) and a reservoir pressure chamber (26) maintaining a pressure bias on the compensation valve means opposing the valve closing force exerted on one of the differential pressure faces.

4,553,391

CONTROL DEVICE FOR A HYDRAULIC CYLINDER FOR MAINTAINING THE PULLING FORCE THEREOF CONSTANT

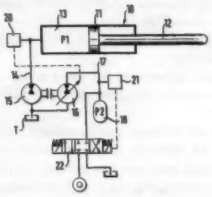
Peter Reinhardt, Lohr/Main, Fed. Rep. of Germany, assignor to Mannesmann Rexroth GmbH, Fed. Rep. of Germany

Filed Nov. 15, 1983, Ser. No. 551,901

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1982, 3244191

Int. Cl.[4] F16D *31/02*

U.S. Cl. 60—413 **4 Claims**



1. A control device for providing a hydraulic cylinder with a constant pulling force, in particular for cables and ropes drawn by vessels, comprising a first hydrostatic machine operable as a pump or a motor having a constant displacement volume, an accumulator and a second hydrostatic machine operable as a pump or a motor having a variable displacement volume, the working chamber of said hydraulic cylinder in communication with a first port of said first machine, another port of said first machine being in communication with a liquid reservoir, said accumulator being connected to a liquid reservoir via said second machine, mechanical means for drivingly coupling said first and said second machine for driving said first machine from said second machine when said second machine operates as a motor under pressure from said accumulator to cause movement of said hydraulic cylinder in one direction and for driving said second machine as a pump to charge said accumulator from said first machine acting as a motor when said cylinder moves in the opposite direction, and means to adjust the displacement volume of said second machine to maintain a constant force being exerted by the piston of said cylinder.

4,553,392

SELF PRESSURIZING, CRANK-TYPE STIRLING ENGINE HAVING REDUCED LOADING OF DISPLACER DRIVE LINKAGES

Bruce J. Chagnot, Athens, and James G. Wood, Albany, both of Ohio, assignors to Stirling Technology, Inc., Athens, Ohio

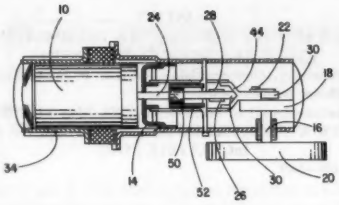
Filed Dec. 12, 1984, Ser. No. 680,753

Int. Cl.[4] F02G *1/04*

U.S. Cl. 60—517 **12 Claims**

1. An improved Stirling engine of the type wherein a reciprocating displacer is drivingly linked to a reciprocating power piston mounted in a housing or to other displacer drive means, wherein the improvement comprises: a spring linked to a point

located between said displacer and the drive linkage to be protected and relaxed in substantially the mean position of said



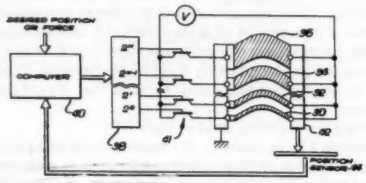
displacer for applying a centering force upon said displacer to reduce the loading on the displacer drive linkage.

4,553,393

MEMORY METAL ACTUATOR

Carl F. Ruoff, LaCrescenta, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 26, 1983, Ser. No. 527,613
Int. Cl.⁴ F03G *7/06*
U.S. Cl. 60—528 **22 Claims**



1. A mechanical actuator comprising:
a fixed position support element;
an output element which is movable with respect to the support element;
a plurality of actuator elements formed of memory metal material, each actuator element having a first end coupled to the support element and a second end coupled to the output element, wherein when an actuator element is heated above a critical temperature it will rapidly attempt to move to a predetermined hot-formed shape; and
control means for selectively heating the actuator elements to control the amount of force exerted against the output element with the forces exerted by the actuator elements being related to each other in a binary fashion.

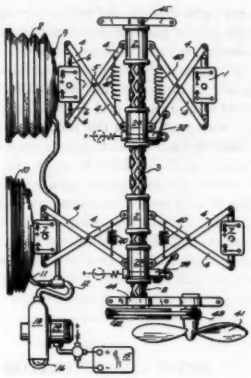
4,553,394

SPINDLE DRIVE WITH EXPANSIBLE CHAMBER MOTORS

Friedrich Weinert, 219-19-131st. Ave, Jamaica, N.Y. 11413

Filed Apr. 15, 1983, Ser. No. 485,486
Int. Cl.⁴ F03G *7/06*
U.S. Cl. 60—530 **7 Claims**

1. A power system comprising: a shaft which contains at least one spiral groove on the outer surface thereof;
a sleeve concentrically mounted on said shaft,
a projection emanating from the inner surface of the sleeve and in operative engagement with said groove, such that reciprocation of said sleeve causes rotation of said shaft;
an expansible chamber motor consisting of a housing, a first fluid within said housing; and
an electrical resistance wire passing through said first fluid whereby upon energization of said wire the first fluid expands within said housing;
said motor further consisting of a second fluid housed within a deformable chamber within said housing, wherein said chamber is in fluid communication with said first fluid whereby upon energization of said wire the first fluid expands to displace said deformable chamber and the



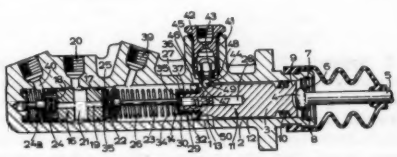
second fluid contained therein; at least one output element of said motor which reciprocates as a result of the movement of said second fluid within the chamber;
a transmission means connecting the output element to said sleeve, whereby said sleeve is reciprocated as a result of the reciprocating movement of the output element and rotary movement of said shaft is obtained.

4,553,395

MASTER CYLINDER ASSEMBLY FOR A VEHICLE BRAKING SYSTEM

Anthony G. Price, Birmingham, and David Parry, West Midlands, both of England, assignors to Lucas Industries public limited company, England

Filed May 31, 1983, Ser. No. 499,201
Claims priority, application United Kingdom, Jun. 11, 1982, 8216982
Int. Cl.⁴ B60T *11/20*
U.S. Cl. 60—562 **5 Claims**



1. A master cylinder assembly for a vehicle hydraulic system comprising a housing having a cylindrical bore defined by a wall provided with a port and comprising an outer bore portion on the outer side of said port and an inner bore portion on said inner side of said port, a piston in said bore and having an outer end guide portion working in said outer bore portion, and intermediate portion projecting from said outer end portion and having an inner end, said piston being movable between a retracted position and an operating position, means defining a pressure space in said bore in advance of said outer end of said piston, a reservoir for fluid, a recuperation valve controlling communication between said reservoir and said pressure space, said recuperation valve being open when said

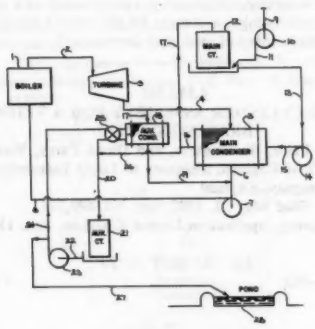
piston is in said retracted position but being adapted to close to isolate said pressure space from said reservoir in response to an initial movement of said piston away from said retracted position and towards said operating position, further movement of said piston in the same direction towards said operating position pressurising fluid in said pressure space to operate auxiliary equipment, an extension at said inner end of said intermediate portion, integral and rigid with said piston, and having a free end, a retainer carried by said extension, and a compression return spring acting on said piston through said retainer to urge said piston into said retracted position, wherein said retainer is mounted on said extension and forms an abutment for said return spring, said retainer including a radial flange having an inner end and an outer end, and a cylindrical, axially extending, guide part at said outer end of said flange slidably guided in said inner bore portion on the said inner side of said port, said piston being guided for sliding movement in said inner and outer bore portions of said bore by only said outer guide portion of said piston and said guide part, which are disposed on opposite sides of said portion irrespective of the axial position of said piston in said bore, said assembly further comprising a coupling means at said inner end of said flange at least partially encircling said extension and co-operating therewith to retain said retainer on said extension, substantially against relative axial movement with respect to said piston.

4,553,396

BRINE CONCENTRATOR

Ray T. Heizer, Concord, Calif., assignor to Water Services of America, Inc., Milwaukee, Wis.

Filed May 3, 1984, Ser. No. 606,529
Int. Cl.[4] F01K *17/00*
U.S. Cl. 60—648 **23 Claims**



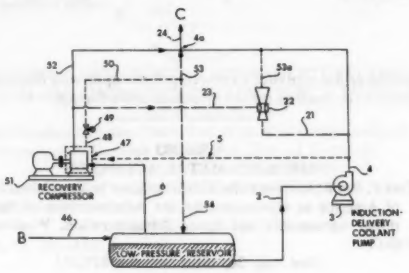
1. Apparatus for concentrating brine, comprising steam-generating means, steam turbine means receiving steam from said steam-generating means, a main steam condensing loop for the steam including a brine-cooled main heat exchanger means, a main steam feed line to pass steam exhaust from said turbine means to said main heat exchanger means, a main condensate return line to pass condensate from said main heat exchanger means back to said steam-generating means, a brine concentrating loop including auxiliary heat exhanger means having a first side and a second side, an auxiliary cooling tower, first means to pass steam from said main steam feed line to the first side of said auxiliary heat exchanger means, second means to pass condensate from the first side of said auxiliary heat exchanger means to said main condensate return line, third means to pass brine from the second side of said auxiliary heat exchanger means to said auxiliary cooling tower, fourth means to pass brine from said auxiliary cooling tower to the second side of said auxiliary heat exchanger means, fifth means to pass brine from said main steam condensing loop to the second side of said auxiliary heat exchanger means, and sixth means extending from said fourth means to withdraw concentrated brine from said brine concentrating loop.

4,553,397

METHOD AND APPARATUS FOR A THERMODYNAMIC CYCLE BY USE OF COMPRESSION

Joseph Wilensky, Denver, Colo., assignor to Soma Kurtis and Jack Sloan, both of Denver, Colo.

Continuation-in-part of Ser. No. 262,783, May 11, 1981, Pat. No. 4,442,675. This application Jun. 20, 1983, Ser. No. 506,708
Int. Cl.[4] F01K *25/06*
U.S. Cl. 60—649 **66 Claims**



1. A process for approximating an isenthalpic compression of a working fluid from a state B (representing a pressure P_2 lower than a pressure P_1 of a state A and a temperature T_2 lower than a temperature T_1 of state A) to a state C (representing a pressure P_3 approximating P_1 and a temperature T_3 intermediate to temperatures T_1 and T_2 such that $T_2<T_3<T_1$) comprising:

energizing the working fluid in state B by

(a) pumping a large quantity of a motive liquid to a pressure at least as great as P_3 and sufficiently high to preserve its liquid state while receiving sensible heat from the working fluid;

(b) communicating the working fluid with the pressured motive liquid in an overall adiabatic environment so that there is a local transfer of thermal energy between the two fluids while maintaining their physical separation, wherein the motive liquid serves to limit the temperature rise and prevent superheating of the working fluid by preserving the two fluids at equal temperatures; and

(c) compressing the working fluid directly, while subject to these conditions, to a pressure P_3 and temperature R_3, during which compression there is at least partial condensation of the working fluid and concomitant release of the condensate latent heat of vaporization to the motive liquid, thus achieving state C for the working fluid.

4,553,398

LINEAR MOTOR COMPRESSOR WITH PRESSURE STABILIZATION PORTS FOR USE IN REFRIGERATION SYSTEMS

Niels O. Young, Free Union, Va., assignor to Helix Technology Corporation, Waltham, Mass.

Filed Feb. 3, 1984, Ser. No. 576,865
Int. Cl.[4] F25B *9/00*; **F04B** *7/04*
U.S. Cl. 62—6 **8 Claims**

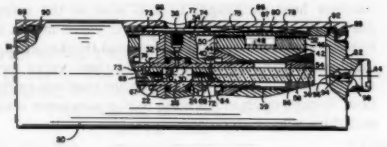
1. A cryogenic refrigerator comprising:

a compressor comprising a piston in a sleeve for compressing and expanding refrigerant gas in a compressor work space which is a portion of a closed working volume;

a displacer in the closed working volume in fluid communication with said compressor work space; and

a fluid passage in the compressor which permits momentary fluid communication between a second closed volume of

refrigerant gas and said compressor work space only at a predetermined portion of piston stroke during the expansion of gas in said work space as the piston is withdrawn to stabilize the pressure of the refrigerant gas in the work space during compressor operation.

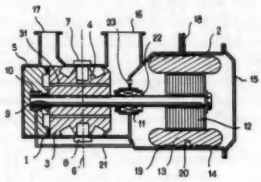


4,553,399

METHOD OF LUBRICATING BEARINGS OF A REFRIGERATION OR THE LIKE COMPRESSOR

Sadafumi Noda, Isahaya, Japan, and Bernard Zimmern, Vantage Point Condominium, 6 New St., East Norwalk, Conn. 06855, assignors to Bernard Zimmern, East Norwalk, Conn.

Filed Apr. 5, 1984, Ser. No. 597,120
Claims priority, application France, Apr. 14, 1983, 83 06079
Int. Cl.[4] F25B *43/02*
U.S. Cl. 62—84 **11 Claims**



1. A method of lubricating bearings in a refrigeration or the like compressor driven by a hermetic electric motor, comprising the steps of:

dissolving a small percentage of oil in a liquid refrigerant used in the compressor;

supplying at least part of the obtained liquid mixture in a casing of the motor;

preparing in the motor casing a lubricating fluid from said mixture by vaporizing said mixture with heat provided by the motor as a result of its operation; and

supplying from said casing of the motor to an intake of the compressor through the bearings at least part of said lubricating fluid.

4,553,400

REFRIGERATION MONITOR AND ALARM SYSTEM

Michael A. Branz, Dunwoody, Ga., assignor to Kysor Industrial Corporation, Cadillac, Mich.

Filed May 4, 1984, Ser. No. 607,283
Int. Cl.[4] F25B *49/00*; G01F *23/10*
U.S. Cl. 62—127 **9 Claims**

1. A monitor and alarm system for a refrigeration system including at least one compressor, said system comprising:

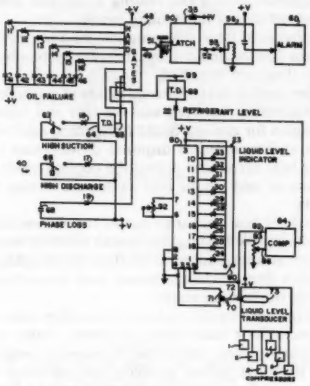
means for sensing the refrigerant level for said compressor and providing an electrical output signal representing the level of the refrigerant;

means coupled to said sensing means for displaying the refrigerant level at a location remote from the refrigerant supply;

means for providing an adjustable reference signal representing a selectable predetermined refrigerant level;

comparator means coupled to said sensing means and said providing means for comparing said electrical output signal and said adjustable reference signal to provide an alarm output signal when the refrigerant level reaches a preset level represented by said adjustable reference signal;

alarm means coupled to said comparator means and responsive of said alarm output signal to provide an alarm indicating a refrigerant level below a predetermined selected level; and



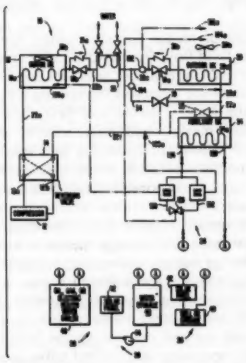
means for adjustable time delay activation of said alarm means, said adjustable time delay means being adjustable to select a time delay interval of a predetermined length after providing said alarm output signal before activating said alarm means.

4,553,401

REVERSIBLE CYCLE HEATING AND COOLING SYSTEM

Ralph H. Fisher, 120F Windsor Castle Dr., Newport News, Va. 23602

Continuation-in-part of Ser. No. 542,375, Oct. 17, 1983, Pat. No. 4,493,193, which is a continuation-in-part of Ser. No. 355,123, Mar. 5, 1982, Pat. No. 4,409,796. This application Jan. 14, 1985, Ser. No. 691,079
Int. Cl.[4] F25B *13/00*
U.S. Cl. 62—160 **17 Claims**



1. A reversible mode heating and cooling system for heating and cooling an interior space, comprising:

(a) compressor means for compressing vaporous refrigerant;

(b) indoor heat exchange means arranged in heat exchange relationship with air in said interior space for condensing refrigerant and heating said air during the heating mode and evaporating refrigerant and cooling said air during the cooling mode;

(c) refrigerant expansion means;

(d) outdoor heat exchange means arranged in heat exchange relationship with outdoor ambient air for evaporating refrigerant during the heating mode and condensing refrigerant during the cooling mode;

(e) refrigerant flow reversing means for providing mode means heating and cooling from the system by refrigerant flow direction selection;

(f) water cooled heat exchange means in series flow relationship with and between said outdoor and indoor heat exchangers for cooling liquid refrigerant, said water cooled heat exchange means disposed downstream of said outdoor heat exchanger during the cooling mode and downstream of said indoor heat exchanger during the heating mode;

(g) auxiliary heat exchange means for evaporating refrigerant during the heating mode, said auxiliary heat exchange means arranged in a series flow relationship with said outdoor heat exchange means and downstream thereof during the heating mode;

(h) refrigerant conduit means connecting said compressor means, indoor heat exchange means, water cooled heat exchange means, refrigerant expansion means, outdoor heat exchange means, auxiliary heat exchange means and refrigerant flow reversing means in a series flow relationship to form a reversible heating and cooling system for transferring heat via a fluid refrigerant between said indoor heat exchange means and said outdoor and auxiliary heat exchange means;

(i) bypass refrigerant conduit means connected in a parallel flow relationship with said outdoor heat exchange means and in a series flow relationship with said water cooled and said auxiliary heat exchange means for selectively bypassing said outdoor heat exchange means and directing at least a part of said refrigerant flow from said water cooled heat exchange means through said auxiliary heat exchange means during the heating mode in parallel flow relationship with refrigerant flow through said outdoor heat exchange means;

(j) storage means for storing a heat exchange fluid;

(k) connecting means connecting said storage means and said auxiliary heat exchange means and said storage means and said water cooled heat exchange means for circulating a heat exchange fluid and exchanging heat between said storage means and said auxiliary heat exchange means and said storage means and said water cooled heat exchange means;

(l) first control means for controlling the extent of heat exchange fluid flow from said storage means to said auxiliary heat exchange means, said first control means including a first sensor disposed for sensing a system parameter during the heating mode and first valve means in said connecting means, said first control means including means for adjustably operating said first valve means in said connecting means to allow heat exchange fluid flow therethrough in response to the parameter sensed by said first sensor;

(m) second control means for controlling heat exchange fluid flow from said storage means to said water cooled heat exchange means, said second control means including means for sensing the selected mode, a second sensor disposed for sensing a system parameter during the heating mode and second valve means in said connecting means, said second control means including means for adjustably operating said second valve means in said connecting means to allow heat exchange fluid flow therethrough during the cooling mode and in response to the parameter sensed by said second sensor during the heating mode; and

(n) third control means for selectively allowing the flow of refrigerant through said bypass refrigerant conduit means, said third control means including a third sensor disposed for sensing a parameter correlatable to the capacity of said outdoor heat exchanger to add heat to the refrigerant during the heating mode and third valve means in said bypass refrigerant conduit means, said third control means including means for operating said third valve means in said bypass refrigerant conduit means to allow refrigerant flow therethrough in response to the parameter sensed by said third sensor.

4,553,402

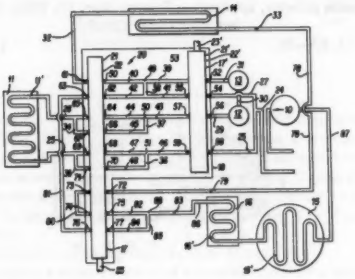
NON-REVERSIBLE MULTIPLE-REFRIGERATION-CYCLE SOLAR APPARATUS INCLUDING A VARIABLE DIRECTING VALVE MECHANISM

Carl V. Cramer, Sr., Frable Rd., Brodheadsville, Pa. 18322

Continuation of Ser. No. 329,256, Dec. 10, 1981, abandoned, which is a continuation of Ser. No. 79,786, Sep. 28, 1979, abandoned. This application Apr. 19, 1983, Ser. No. 486,783

Int. Cl.[4] A63C *19/10;* **F25B** *13/00*

U.S. Cl. 62—235.1 **16 Claims**



1. A hermaphrodite modified refrigeration apparatus for enabling selective generation, storage, and use of heating or cooling, for heating or cooling a medium, and for enabling defrosting of the apparatus, integrated to generate heating or cooling for use as desired by the user, adapted to subject the medium to a refrigerant, for heating or cooling the medium or for defrosting, by transferring heat from or to the refrigerant, which refrigerant is conditioned in the apparatus in one of a plurality of true refrigeration cycles each generated by non-reversible flow of the refrigerant through selected elements of the apparatus, and further adapted to actively acquire, store, and use solar energy, for generating solar heating, comprising:

(a) means for conditioning the refrigerant, adapted to generate non-reversible flow of, exchange heat with, and transform the phase, temperature and pressure of, the refrigerant, to enable the medium to be subjected to the conditioned refrigerant for heating or cooling of the medium, including a plurality of elements, which include an element for absorbing, storing, and using heat derived from solar energy, adapted to heat the refrigerant, and further adapted to be positioned so as to receive the heat of solar energy;

(b) means for enabling selective directly, and varying of the sequence, of non-reversible flow of the refrigerant through selected elements, bypassing and isolating non-selected elements, of the means for conditioning the refrigerant, adapted to generate a selected one of the plurality of true refrigeration cycles to enable operation of the apparatus in the selected refrigeration cycle for conditioning the refrigerant, to selectively generate, store, and use heating or cooling of the medium or to defrost the apparatus; and

(c) means for interconnecting the means for enabling selec-

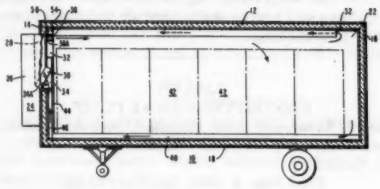
tive directing of non-reversible flow of the refrigerant, and the plurality of elements of the means for conditioning the refrigerant.

4,553,403

TRANSPORT REFRIGERATION AIR SYSTEM

David H. Taylor, Bloomington, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.

Filed May 21, 1984, Ser. No. 612,490
Int. Cl.[4] F24F 7/06
U.S. Cl. 62—239 **7 Claims**



1. An air flow system for a perishable cargo container having a generally right parallelepiped interior shape to contain the cargo, and having a transport refrigeration unit including an evaporator and fan means for effecting air flow through a suction space downstream of said evaporator and through said evaporator, the unit being mounted at the front end wall of the container in generally horizontally-centered relation, and having a conditioned air outlet in its top portion for discharging air toward the rear end of the container and a return air inlet in its bottom portion in communication with said suction space and a normal air flow return space below the cargo space, comprising

duct means in at least one of the upper side corners of said container and extending rearwardly for at least the major portion of the length of said container and adapted to receive air in its rearward end;

means connecting the forward ends of said ducts with said suction space;

said duct means providing a secondary air flow return path operable to provide return flow therethrough from the rear of the container to a degree related to the overall resistance to air flow return of that return which is through said floor return space.

4,553,404

ROOM AIR CONDITIONER WITH HIGH CAPACITY FRESH AIR CIRCULATION MEANS

Gregory L. Malchow, and Edwin H. Frohbieter, both of Lincoln Township, Berrien County, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

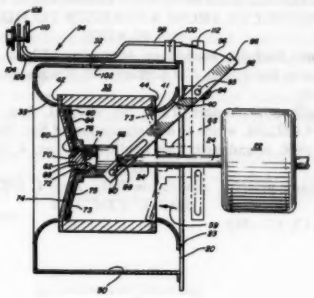
Filed Jun. 20, 1984, Ser. No. 622,868
Int. Cl.[4] F25D 23/12
U.S. Cl. 62—262 **20 Claims**

1. In a room air conditioner having means defining an indoor section and an outdoor section, a blower housing disposed within said indoor section and having an indoor air inlet, an outdoor air inlet and an air outlet, improved means or selectively delivering desired proportions of indoor and outdoor air to said outlet comprising:

a centrifugal blower wheel rotatably mounted within said blower housing, said blower wheel defining an axis of rotation and having a first inlet communicating with said indoor air inlet and a second axially spaced inlet communicating with said outdoor air inlet;

a movable air baffle positioned within said blower wheel for movement along said blower wheel axis; and

mounting means for adjustable positioning said baffle at any of various locations along said axis to vary the ratio of the axial length of the blower acting on the indoor air to the axial length of the blower acting on the outdoor air to



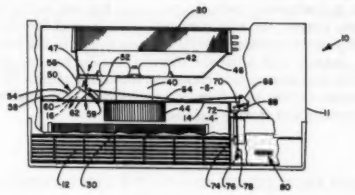
thereby accurately control the proportion of indoor air and outdoor air delivered to said outlet.

4,553,405

VENT ASSEMBLY FOR USE WITH AN AIR CONDITIONING UNIT

James E. Napolitano; Theodore S. Bolton, both of Liverpool, and John P. McHale, Syracuse, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 9, 1983, Ser. No. 559,677
Int. Cl.[4] F25D 23/12
U.S. Cl. 62—262 **11 Claims**



1. An air conditioning unit which is divided by a partition into an indoor section and an outdoor section, said indoor section having an indoor heat exchanger and fan means for circulating air between the space to be conditioned and the indoor section, and said outdoor section having an outdoor heat exchanger and fan means for circulating outdoor air through the outdoor section which comprises:

an outdoor circulating fan means shroud including surfaces for directing outdoor air within the outdoor section and further defining an opening therethrough;

said partition defining an opening;

a vent assembly including surfaces defining an air passageway extending from the opening in the outdoor circulating means shroud to the opening in the partition such that air may flow from the outdoor section to the indoor section, and said vent assembly further including door means positioned in the passageway for controlling the flow of air therethrough; and

said door means including a door frame located in said passageway between said door and said partition, such that when said door is in the closed position the air pressure in the outdoor section tends to force said door against said door frame to thereby provide a sealing effect therebetween.

4,553,406

DEVICE FOR STORING AND AUTOMATIC DRAWING OF SO-CALLED INTERMEDIATE ELEMENTS, FOR LOADING, FEEDING AND DISCHARGE OF CERTAIN PRODUCTS, FROM A FREEZER TO HORIZONTAL PLATES

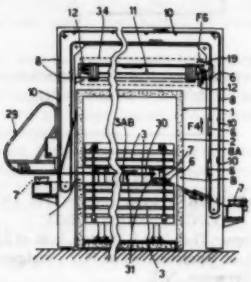
Angelo Richelli, Residenza Acquario, Milano 2 Segrate, and Guido Battistella, Via Volturno 80, Brugherio Milano, both of Italy

Continuation-in-part of Ser. No. 294,561, Aug. 19, 1981, Pat. No. 4,432,214, which is a continuation of Ser. No. 167,111, Jul. 6, 1980, abandoned. This application Aug. 4, 1983, Ser. No. 520,158

Claims priority, application Italy, Aug. 4, 1982, 22734 A/82

Int. Cl.[4] F25C *5/14*

U.S. Cl. 62—341 12 Claims



1. A device for automatic storing and for recovering from storage, elements for loading, feeding and unloading products from a horizontal plate freezer, said freezer including a conveying system for said elements outside said freezer for conveying said elements from the freezer outlet to the freezer inlet, and, outside and adjacent thereto, means for receiving, supporting and storing said elements, including means for carrying elements exiting said freezer one by one onto said receiving, supporting and storing means.

4,553,407

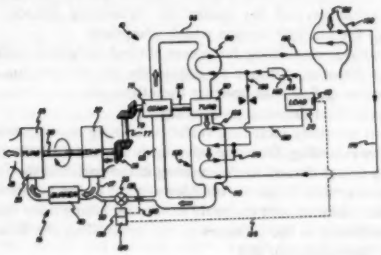
HIGH EFFICIENCY AIR CYCLE AIR CONDITIONING SYSTEM

George C. Rannenberg, Canton, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 12, 1983, Ser. No. 560,612

Int. Cl.[4] F25D *9/00*

U.S. Cl. 62—402 7 Claims



1. An air cycle air conditioning system, said system including a compressor for compressing air supplied thereto, said compressor discharging to an expansion turbine which expands and chills said compressed air for the cooling of a load, said system further including a high pressure regenerative heat exchanger by which said chilled air precools said compressed air prior to the expansion thereof within said turbine, said air conditioning system being characterized by:

a low pressure heat exchanger, said expanded and chilled air being discharged through said low pressure heat exchanger from said expansion turbine; and

a closed-loop liquid circulatory system, portions thereof being in heat exchanger relationship with said compressed air in said regenerative heat exchanger and said chilled air in said low pressure heat exchanger;

liquid circulating within said closed-loop circulatory system cooling air conditioning system airflow by absorbing heat therefrom within said regenerative heat exchanger and rejecting said heat to said chilled air within said low pressure heat exchanger.

4,553,408

CENTRIFUGAL HEAT PUMP

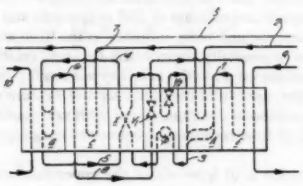
William T. Cross, and Colin Ramshaw, both of Cheshire, England, assignors to Imperial Chemical Industries PLC, London, England

Filed Mar. 9, 1984, Ser. No. 588,105

Claims priority, application United Kingdom, Mar. 22, 1983, 8308135

Int. Cl.[4] F25B *15/00*

U.S. Cl. 62—476 4 Claims



1. An absorption heat pump, comprising: a set of operatively interconnected components including an evaporator, an absorber, a vapor generator and a condenser; at least one of said components comprising at least one rotatable plate having two opposite faces separated by the thickness of such plate, and each such plate being constructed and arranged for accomplishing heat transfer across such thickness, wherein;

(a) said vapour generator is mounted upon a rotary shaft for rotation therewith and comprises at lest one said plate constructed and arranged such that across a first said face of which a first fluid source of heat may flow and across the second said face of which a solution of a vapourisable working fluid may flow;

(b) said condenser is mounted upon said rotary shaft for rotation therewith and comprises at least one plate constructed and arranged such that to a first face of which vapourised working fluid from said vapour generator may flow and across the second face of which a medium to be heated may flow;

(c) said absorption heat pump further comprises a rotary heat exchanger, mounted upon said rotary shaft for rotation therewith and comprising at least one plate constructed and arranged such that across a first face of which a depleted solution of working fluid from said vapour generator may flow and across the second face of which a stronger solution of working fluid for feeding to said vapour generator may flow;

(d) said absorption heat pump further comprises a pump, mounted about said rotary shaft and adapted to be driven thereby, said pump being constructed and arranged to deliver said stronger solution of working fluid under pressure to the vapour generator;

(e) said absorber is mounted upon said rotary shaft for rotation therewith and comprises at least one plate con-

structed and arranged such that across a first face of which said working fluid in vapour from and said depleted solution of working fluid form said rotary heat exchanger may together flow and across the second face of which said medium to be heated may flow;

(f) said evaporator is mounted upon said rotary shaft for rotation therewith and comprises at least one plate constructed and arranged such that across a first face of which an ambient fluid source of heat may flow and across the second face of which condensed working fluid from said condenser may flow;

(g) said absorption heat pump further comprises a plurality of flow restriction valves constructed and arranged to maintain the pressure in the vapour generator and in the condenser at an elevated level; and

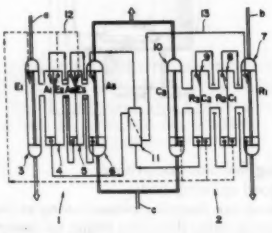
(h) said absorption heat pump further comprises drive means constructed and arranged to rotate said rotary shaft.

4,553,409

MULTIPLE REGENERATION MULTIPLE ABSORPTION TYPE HEAT PUMP

Tetsuro Furukawa, Suita, Japan, assignor to Hitachi Zosen Corporation, Osake, Japan

Filed Jul. 12, 1984, Ser. No. 630,208
Int. Cl.[4] F25B *15/00*
U.S. Cl. 62—476 **9 Claims**



1. A multiple regeneration multiple absorption type heat pump comprising multiple absorption means and multiple regeneration means between which a vaporizable liquid refrigerant and a liquid absorbent are circulated, wherein

said multiple absorption means comprises

an evaporator for evaporating the refrigerant from said multiple regeneration means by the heat of an external low-temperature source,

one or more absorbing/evaporating units having an absorbing zone and an evaporating zone in heat conduction with said absorbing zone, said absorbing zone being adapted to allow the absorbent introduced thereinto to absorb the refrigerant vapor from said evaporator or the evaporating zone of a preceding absorbing/evaporating unit, said evaporating zone being adapted to evaporate the refrigerant from said multiple regeneration means by the heat of absorption produced in said absorbing zone, and

an absorber for allowing the absorbent introduced thereinto to absorb the refrigerant vapor from the evaporating zone of the or a preceding absorbing/evaporating unit, a heat receiving fluid being adapted to be at least partially passed through said absorber so as to be heated by the heat of absorption produced in said absorber, and

said multiple regeneration means comprises

a regenerator for concentrating the absorbent introduced thereinto by evaporating the absorbed refrigerant by the heat of an external high-temperature source,

one or more condensing/regenerating units having a condensing zone and a regenerating zone in heat conduction with said condensing zone, said condensing zone being adapted to condense the refrigerant vapor from said regenerator or the regenerating zone of a preceding condensing/regenerating unit, said regenerating zone being adapted to concentrate the absorbent introduced thereinto by evaporating the absorbed refrigerant by the heat of condensation produced in said condensing zone, and

a condensor for condensing the refrigerant vapor from the regenerating zone of the or a preceding condensing-/regenerating unit, said heat receiving fluid being adapted to be at least partially passed through said condenser so as to be heated by the heat of condensation produced in said condensor,

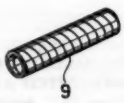
said multiple absorption means and said multiple regeneration means being so adapted that the temperature of said absorber is generally equal to the temperature of said condenser.

4,553,410

KNITTING NEEDLES WITH A FLEXIBLE CORD

Hidekazu Okada, Ashiya, Japan, assignor to Clover Mfg. Co., Ltd., Osaka, Japan

Filed Aug. 29, 1983, Ser. No. 527,424
Claims priority, application Japan, Aug. 30, 1982, 57-131060[U]; Jan. 11, 1983, 58-2534[U]
Int. Cl.[4] D04B *35/02*
U.S. Cl. 66—117 **9 Claims**



1. A knitting needle with a flexible cord, comprising at least one rigid needle body made of bamboo, said needle body having a tapered rear end section with an annular rear terminal end wall surrounding an opening mouth of an axial bore formed in said tapered rear end section, said axial bore extending forwardly from said terminal rear end wall into said needle body within a limited range slightly beyond an axial length of said tapered rear end section;

a rigid tubular member disposed within and fastened to said axial bore of said needle body; and

a flexible cord having an integral axial extension which axially extends forwardly from an enlarged forward end wall of a substantially conical enlargment formed integrally with the flexible cord, and is inserted into and fastened to a mounting bore of said rigid tubular member, wherein a rear end wall of said tubular member is in contact with said enlarged forward end wall of said enlargment and said annular rear terminal end wall of the needle body is in contact with said enlarged forward end wall of said enlargement to thereby form a smooth continuous joint between said tapered rear end section of said needle body and said substantially conical enlargment of said flexible cord.

4,553,411
STAMPED KNITTING TOOL FOR KNITTING MACHINES

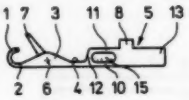
Bernhard Schuler, Sonnenbühl, and Ernst Beck, Bitz, both of Fed. Rep. of Germany, assignors to Theodor Groz & Söhne and Ernst Beckert Nadelfabrik KG, both of Albstadt, Fed. Rep. of Germany

Continuation of Ser. No. 254,030, Apr. 14, 1981, abandoned. This application Oct. 4, 1984, Ser. No. 658,060

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1980, 3014751

Int. Cl.⁴ D04B *35/02*

U.S. Cl. 66—123 **1 Claim**



1. A stamped knitting needle for a knitting machine, said needle comprising:

a hooked needle;

at least one operating foot; and

a shank portion having first and second ends, at least a portion of said shank supporting said foot, said shank including a longitudinally extending upper flexible rib having a width not greater than 1.1 mm., a longitudinally extending lower flexible rib having a width not greater than the width of said upper rib, a first guide portion at said first end of said shank, a second guide portion at said second end of said shank, said first and second guide portions interconnecting said upper and lower ribs and said upper and lower ribs defining an opening therebetween, said opening being wider than either of said upper or lower flexible ribs, said opening being greater than two times as long as the combined width of said upper and lower flexible ribs, and said opening being offset from said foot and positioned entirely between said foot and said needle hook to absorb vibrations transmitted to said shank by said operating foot.

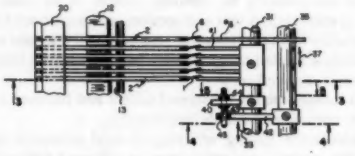
4,553,412
FLAT BED KNITTING MACHINE HAVING HIGH SPEED SECONDARY STITCH ATTACHMENT

Carl J. Odham, Asheboro, N.C., assignor to Stedman Corporation, Asheboro, N.C.

Filed Feb. 7, 1984, Ser. No. 577,816

Int. Cl.⁴ D04B *23/00*

U.S. Cl. 66—207 **4 Claims**



1. A flat bed knitting machine having a high speed secondary stitch attachment, said machine comprising a plurality of reciprocally movable knitting needles, a plurality of main guides for individually guiding each of a plurality of base yarns, a main guide bar mounting said main guides adapted for a shogging and swinging motion about its longitudinal axis to impart a lapping movement to said main guides to wrap individual base yarns about an individual needle, a secondary guide for guiding a secondary yarn, a secondary guide bar mounting said secondary guide adapted for shogging and swinging motion about its longitudinal axis which extends parallel to and is spaced from the longitudinal axis of the main guide bar for guiding said secondary yarn into engagement with at least one of said needles to which a base yarn is guided, and connecting means between said main guide bar and said secondary guide bar for connecting said guide bars together for unified swinging movement and for shogging movement independent of one another.

4,553,413
WASHING MACHINE

Nobuo Genji, Osaka; Wataru Takahashi, Amagasaki; Masatatsu Nakamura, Osaka, and Yoichi Kawai, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

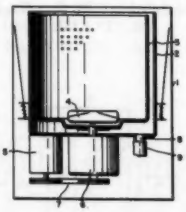
PCT No. PCT/JP83/00140, § 371 Date Jan. 3, 1984, § 102(e) Date Jan. 3, 1984, PCT Pub. No. WO83/04058, PCT Pub. Date Nov. 24, 1983

PCT Filed May 10, 1983, Ser. No. 574,103

Claims priority, application Japan, May 10, 1982, 57-78936; May 10, 1982, 57-78952; Jan. 4, 1983, 58-330

Int. Cl.⁴ D06F *33/02*

U.S. Cl. 68—12 R **9 Claims**



1. A washing machine comprising:

a washing load agitating body;

a washing load size detecting means having an instantaneous load variation value detection menas for detecting instantaneous values of variation in the load on said agitating body, and level judging means for judging the levels of said values and having integrating means for integrating said instantaneous values of the variations in the load over predetermined periods of time and comparator means for comparing the integrated values with a predetermined value for producing a washing load size signal; and control means to which said size detecting means is connected for controlling the washing operation of said washing machine in response to said washing load size signals.

4,553,414
THEFT PREVENTION DEVICE FOR AUTOMOBILE AUDIO EQUIPMENT

Mario A. Caputo, 4905 Avenue "M", and Jeffrey C. Caputo, 4903 Avenue "M", both of Brooklyn, N.Y. 11234

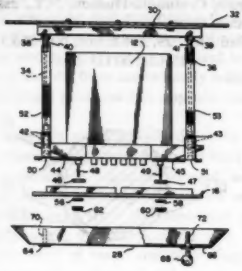
Filed Jun. 4, 1984, Ser. No. 617,015

Int. Cl.⁴ B65D *55/14;* **E05B** *73/00*

U.S. Cl. 70—58 **10 Claims**

1. An improved theft prevention device for an automobile radio receiver as installed within a dashboard and enclosed behind an instrument panel trim plate, said improvement comprising a mounting assembly secured to a portion of the automobile body behind the dashboard, said mounting assembly including an anchor bracket attached to said auto body portion and at least one support rod extending from said anchor bracket forwardly to the dashboard, guide plate means attachable to the radio, said guide plate means being adapted for accommodatingly positioning a forward end of the support rod, said forward end of the support rod further including a coupling member, a cover plate having integral fastening means, said fastening means being adapted for engaging the

coupling member for adjustable tightening of the cover plate to urge the cover plate into abutting contact with the dashboard in overlaying relationship with respect to the radio receiver.

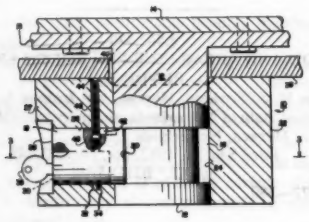


4,553,415

TRAILER KINGPIN LOCKING DEVICE WITH PROTECTED LOCKING BAR APERTURE

Constant O. Maffey, 34 Burchfield Ave., Cranford, N.J. 07016

Filed Nov. 16, 1984, Ser. No. 671,989
Int. Cl.[4] F16B *41/00*
U.S. Cl. 70—232 **4 Claims**



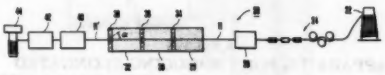
1. In a locking device for use in connection with a trailer kingpin having a circumferential recess therein, said locking device comprising (1) a casing having a first aperture therein for receiving said kingpin and having a substantially thick wall surrounding said aperture, said casing being provided with a second aperture extending completely through the wall thereof and opening into said first aperture; (2) a locking bar having an inner end and an outer end and slidably disposed in said second aperture whereby upon predetermined inward sliding movement thereof its inner end enters said recess in the kingpin, said locking bar having further a determinate transverse cross-section normal to its line of sliding movement, and (3) a locking means disposed within the locking bar and engageable with and releasable from said casing, the improvement comprising a protrusion on the outer wall of the casing in the area of the second aperture whereby the outer end of said locking bar is recessed within said second aperture when said locking bar is in locked position extending into the recess in said kingpin, said second aperture from the outer end of said locking bar in locked position to the outer wall of the protrusion on said casing being counterbored beyond said transverse cross-section of said locking bar.

4,553,416

DRY TYPE CONTINUOUS WIRE DRAWING PROCESS

Chuzoh Sudoh; Hyoji Hagita, and Satoru Fujii, all of Amagasaki, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Jun. 20, 1983, Ser. No. 505,843
Int. Cl.[4] B21C *9/00, 9/02, 43/04*
U.S. Cl. 72—40 **7 Claims**



1. A dry type continuous wire drawing process comprising the following continuously conducted steps of:

feeding continuously a steel wire by unwinding the same from a pay-off stand;

mechanically descaling the continuously fed wire;

guiding and passing the descaled wire through a lubricant surfacer bath, a reinforcing lubricant bath and a pre-die lubricant bath, which baths are arranged in tandem in the recited order so that the wire runs therethrough continuously;

said lubricant surfacer bath containing therein a lime powder having a mean particle diameter not larger than 50 microns and having near an exit thereof a powder applying die having an internal diameter which is from 0.1 to 0.2 mm larger than the diameter of the descaled wire so as to permit application of a lime coating on the surface of the wire while said wire passes through said lubricant sufacer bath;

said reinforcing lubricant bath containing therein a sodium stearate powder having a mean particle diameter not smaller than 2 microns and having near an exit thereof a powder applying die having an internal diameter slightly larger than the diameter of the lime-coated wire so as to apply a coating of sodium stearate on the surface of the lime-coated wire while allowing the wire to run through said reinforcing lubricant bath;

said pre-die lubricant bath containing a calcium stearate powder for applying a coating of calcium stearate on the surface of the sodium stearate-coated wire, thereby forming three layers of coating on the surface of the descaled wire; and

drawing the lubricant-coated wire through a drawing die.

4,553,417

IMPLANTATION OF CERTAIN SOLID LUBRICANTS INTO CERTAIN METALLIC SURFACES BY MECHANICAL INCLUSION

Philip O. Badger, Niles, Mich., assignor to Miracle Metals, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 465,333, Feb. 9, 1983, abandoned, which is a continuation-in-part of Ser. No. 254,944, Apr. 16, 1981, abandoned. This application Jun. 12, 1984, Ser. No. 619,823
Int. Cl.[4] B21D *53/10*; B05D *3/00*; C21D *6/00, 9/46*; F16C *33/10*
U.S. Cl. 72—42 **13 Claims**

1. A process of providing a lubricious surface for certain carbon and stainless steels for high wear applications wherein a length of the steel is reduced from an initial larger to a final smaller cross-sectional size by one or more cold workings, characterized by: preparing the surface of the steel including annealing the steel in order to form voids on the surface thereof; covering the surface of the steel by coating the same with micrometer sized particles of at least one inorganic solid lubricant; and subsequently cold working the steel after said coating to reduce the same to said final cross-sectional size, the

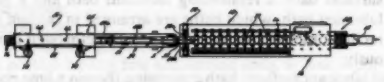
temperatures during said coating and subsequent cold working being below the oxidation temperature of the lubricant.

4,553,418

APPARATUS FOR PRODUCING ELONGATED WORKPIECES OF PREDETERMINED TRANSVERSE PROFILE

Herbert M. Stoehr, New Berlin, and John J. Toben, Milwaukee, both of Wis., assignors to Artos Engineering Company, New Berlin, Wis.

Filed Mar. 15, 1984, Ser. No. 589,758
Int. Cl.[4] B21D *5/08, 7/06, 43/12;* B21B *1/24*
U.S. Cl. 72—132 **14 Claims**



6. Apparatus for converting lengthwise continuous flat metal strip into substantially identical elongated workpieces, each having a fold along its length intermediate its side edges and having curvature across its width between said fold and at least one of its side edges, said apparatus comprising:

A. roller forming means through which strip passes in constant lengthwise motion in one direction at a first speed and by which said curvature is imparted;

B. a flying shear at a cutoff station spaced in said direction from the roller forming means whereby transverse cuts are made through the strip as it continues in said motion, to sever workpiece blanks from it;

C. an endless conveyor comprising a pair of laterally spaced apart top stretches cooperable to support a workpiece blank bridging across them and

(1) which extend from said cutoff station to a folding station spaced in said direction from the cutoff station and

(2) which move constantly in said direction at a second speed, faster than said first speed, to lengthwise separate each severed blank from the strip while carrying the blank to the folding station;

D. a folding press at said folding station comprising

(1) a ram having a blade-like upper portion movable up and down between said stretches and having an upper edge extending in said direction,

(2) means for actuating said ram up from and down to a lowered position at which said top edge is below a blank on said stretches, and

(3) a folding die above said ram, said folding die

(a) having a downwardly opening groove wherein the upper edge portion of the ram is receivable and which cooperates with the same in folding a workpiece that is between the ram and the folding die, and

(b) being movable up and down between

(i) a defined lower position wherein the folding die is above said stretches and a workpiece blank on them but is engageable by the blank as it is lifted off of said stretches by the rising ram, and from which the folding die is raised by the ram, and

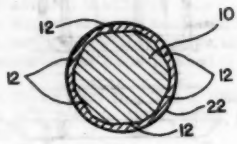
(ii) a defined raised position which the folding die attains while the ram continues to rise and at which the ram cooperates with the folding die to fold a workpiece.

4,553,419

PROCESS FOR FORMING CELL CANS HAVING INTERNAL LONGITUDINAL RIBS

John T. Goodman, Croton-on-Hudson, N.Y., assignor to Duracell Inc., Bethel, Conn.

Filed Mar. 29, 1982, Ser. No. 363,172
Int. Cl.[4] B21D *22/00*
U.S. Cl. 72—349 **9 Claims**



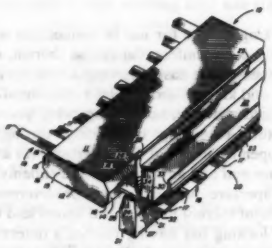
1. An improved process for forming an electrochemical cell having a cylindrical cell container whereby upon construction of the cell the contact between the cell container and an electrode material contained therein is enhanced, said cylindrical cell container being formed by an ironing punch upon which a metal blank container having a cup-like configuration is positioned, said ironing punch forcing said metal blank through a series of ironing rings, each successive ring having a smaller inner diameter than the previous ring, said rings successively deforming the metal container so as to progressively thin the walls of the container, said improvement comprising, as part of said deformation step, simultaneously forming a wall having a non-cylindrical inner surface, and a substantially cylindrical exterior surface, and thereafter disposing an electrode into contact with said non-cylindrical inner surface, with said non-cylindrical inner surface having at least one internally extending portion, whereby the contact of said container wall with said electrode material is enhanced.

4,553,420

METHOD AND APPARATUS FOR TOUCH-FREE LEAD BENDING

Richardus H. J. Fierkens, Herwen, and Ireneus J. T. M. Pas, Rozendaal, both of Netherlands, assignors to ASM Fico Tooling, b.v., Herwen, Netherlands

Filed Sep. 30, 1983, Ser. No. 537,681
Int. Cl.[4] B21D *5/02*
U.S. Cl. 72—380 **20 Claims**



1. An apparatus for bending the leads of a dual-in-line semiconductor package from a manufacturing position in which a plurality of leads are disposed on each of two sides of the package and extend outwardly from the side of the package substantially parallel to the plane of the top surface thereof to a use position in which said plurality of leads on each side of the package are operably disposed substantially nearly vertically downward and approximately nearly normal to the plane of the bottom face of said package for engaging pin sockets and

the like for incorporation into an electrical circuit, said bending apparatus comprising:

an anvil means having a substantially flat distal end for operatively engaging and supporting that portion of the underside of said leads immediately adjacent at least one side of said package for supporting said leads to prevent bending and the like from immediately adjacent said package to a bending point on the opposite side of the anvil means.

a vertically movable punch means operably disposed over the top portion of all of the leads on at least one side of the package immediately adjacent to said anvil means for bending all of said plurality of leads on said at least one side of said package from the horizontal position to the substantially nearly vertical position; and

a smooth thin band of metal operably disposed about the lead-engaging end portion of said punch means for creating a barrier between said punch means and said leads so that substantially all sliding, scoring, scratching, and the like, of said plurality of leads is eliminated as the punch slides across said band instead of across said leads and said band remains in contact with the top side of said leads during the entire bending operation.

4. A method of bending leads in a multiple lead dual-in-line package having two rows of leads, one on each side of said package, and wherein the said plurality of leads are originally substantially parallel to the surface of the package and ultimately substantially nearly vertical to the plane of the package for insertion into electrical sockets and the like, said method comprising the steps of:

supporting the base of at least one row of leads proximate the junction where one end of said leads is disposed in said package;

forming a U-shaped channel having a length at least equal to the length of said row of leads from a smooth thin sheet of metal;

inserting a vertically positionable bending member within said U-shaped channel;

lowering said bending member and said surrounding metal sheet to operatively engage the top portions of one row of leads immediately outside of said supported bases; and

bending said row of leads from the horizontal position to the substantially nearly vertical position without said bending member physically touching said leads, so that any sliding of the bending member is over the surface of the steel sheet to substantially eliminate scratching and similar damage to said leads.

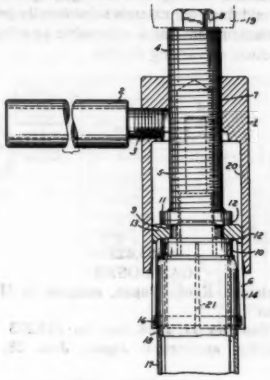
4,553,421

RING COMPRESSOR TOOL

Lawrence A. Provost, Warren, and Robert D. Boyer, Ferndale, both of Mich., assignors to Sealed Power Corporation, Muskegon, Mich.

Filed Apr. 30, 1984, Ser. No. 605,057
Int. Cl.[4] B21D *41/04*
U.S. Cl. 72—402 **4 Claims**

1. A tool for compressing a non-resilient metal ring to a smaller diameter comprising in combination a receiver, a threaded shaft mounted in the receiver, a collet having a rotatable connection with the shaft, said receiver being a hollow member into which the collet retreats upon turning of the threaded shaft, means adjacent the ends of the collet fingers when open which receive a ring to be compressed whereby upon turning the threaded shaft the collet is drawn into the receiver and the fingers coact with the inner wall of the receiver to move the fingers of the collet toward closed position and thereby decrease the diameter of the collet and compress the ring to a smaller diameter, and a handle for manually holding the receiver against turning while the threaded shaft is turned to draw the collet into the receiver.

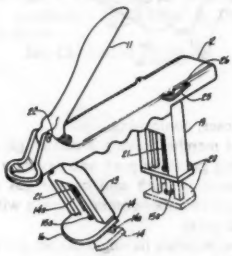


4,553,422

TAP DUCT CRIMPING TOOL

Robert M. Bilkie, 6936 Gillman, Garden City, Mich. 48135

Filed Dec. 5, 1984, Ser. No. 678,588
Int. Cl.[4] B21J *13/08*
U.S. Cl. 72—458 **6 Claims**



1. A bending tool for securing a tap duct to a main duct wherein the tap duct has a flanged interior end extending into the main duct through an opening therein and also has an open exterior end, said tool comprising:

(a) base means for extending transversely across and seating in supported relationship against the exterior open end of the tap duct;

(b) a handle means pivotably attached to said base means;

(c) a rear leg assembly attached to said base means, said rear leg assembly adapted to extend interiorly into said duct, said rear leg assembly having a rear leg means, a retaining plate integrally attached thereto, and a duct-engaging foot means; and wherein said foot means is slidably attached to said rear leg assembly; and

(d) manually actuated bending means mounted on said base means for extending therefrom into the open end of said tap duct and having anvil means movable in a bending movement upon actuation of said bending means for bending a flange of said flanged end outwardly of said tap duct and toward the interior surface of said main duct adjacent to said opening; said bending means comprising a duct-engaging front leg assembly including a front leg inte-

grally attached to said handle and adapted to extend into said duct and an anvil means slidably attached to said front leg means and having a duct-engaging crimping face; wherein said front leg extends substantially perpendicular to said handle means and is adjustable so as to accommodate tap ducts of varying depths.

4,553,423

GAS DOSER

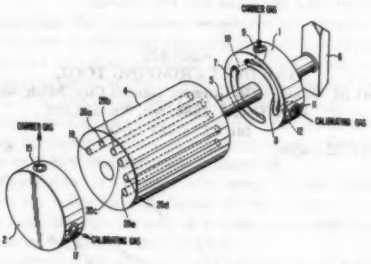
Masahiro Tanimoto, Kyoto, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed Jun. 11, 1984, Ser. No. 619,273

Claims priority, application Japan, Jun. 28, 1983, 58-101578[U]

Int. Cl.⁴ G01C *17/38*

U.S. Cl. 73—1 G **6 Claims**



1. A gas doser, comprising

a gas input member having a carrier gas input port and a calibrating gas input port, and having a first gas chamber communicating with said carrier gas input port and a second gas chamber communicating with said calibrating gas input port;

a gas output member having a carrier gas output port and a calibrating gas output port, and having a third gas chamber communicating with said carrier gas output port and a fourth gas chamber communicating with said calibrating gas output port; and

a change-over rotor rotatable about a longitudinal axis of rotation, disposed between said gas input member and said gas output member, having a carrier gas ventilating conduit for providing communication between said first gas chamber and said third gas chamber and a plurality of calibrating gas measuring conduits for providing communication between said second gas chamber and said fourth gas chamber, opposite ends of said carrier gas ventilating conduit and said plurality of calibrating gas measuring conduits being mutually spaced from each other about said longitudinal axis of rotation equal distances from said axis, said change-over rotor being successively rotatable between a first position in which said second gas chamber communicates with said fourth gas chamber through said carrier gas ventilating conduit and a plurality of second positions in which said first gas chamber communicates with said third gas chamber through a successively increasing number of said plurality of calibrating gas measuring conduits.

4,553,424

METHOD FOR DETECTING AN OXYGEN CONCENTRATION AND A METHOD FOR CONTROLLING AN AIR-TO-FUEL RATIO BASED ON THE DETECTED OXYGEN CONCENTRATION

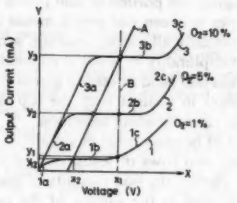
Shigenori Sakurai; Takashi Kamo, and Shirou Kimura, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 22, 1983, Ser. No. 477,845

Claims priority, application Japan, Mar. 23, 1982, 57-45902; Apr. 5, 1983, 58-56365

Int. Cl.⁴ G01N *27/04*

U.S. Cl. 73—27 R **6 Claims**



1. A method for measuring the concentration of oxygen in a gas to be detected using a limiting current type oxygen sensor which is adapted to output a current in response to the oxygen concentration of the gas and the characteristic curve between voltage applied to the oxygen sensor and the current outputted therefrom of which consists of a first leading edge portion that increases in current intensity level with the increase in the voltage applied to the oxygen sensor within a voltage range less than a first magnitude of voltage, a flat portion of a substantially constant current intensity level from the first magnitude to a second magnitude of voltage even with the increase in voltage, and a second leading edge portion for a voltage more than the second magnitude, and said limiting current type oxygen sensor having the voltage range of from the first to second leading portions which gives rise to the flat portions of the voltage-current characteristic curves shift depending on the different oxygen concentrations of the gas, which method comprising the steps: determining the position and slope relationships of an inclined straight line having voltage applied to the oxygen sensor and the current outputted from the oxygen sensor as its variables that the voltages applied to the oxygen sensor and taken along the inclined straight line at different oxygen concentrations fall within the specified voltage range which gives rise to the flat portion at each of said oxygen concentrations;

determining the relationship of an outputted current-oxygen conversion straight line with reference to the voltage-current characteristic curve and the inclined straight line;

inputting a given magnitude of initial voltage to the oxygen sensor to cause it to output a current;

correcting the initial voltage based on the outputted current with reference to the inclined straight line;

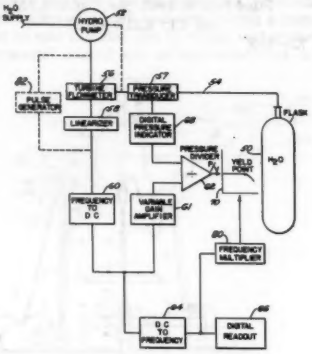
inputting the corrected voltage to the oxygen sensor to cause it to output a current; and

determining the concentration of oxygen in the gas from the current thus outputted from the application of the corrected voltage with reference to the outputted current-oxygen concentration conversion straight line.

4,553,425
DYNAMIC PRESSURE TEST UNIT-RATIO METHOD

Peter R. Tkachuk, Exeter, N.H., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 2, 1984, Ser. No. 576,229
Int. Cl.[4] G01M *5/00*
U.S. Cl. 73—37 **1 Claim**



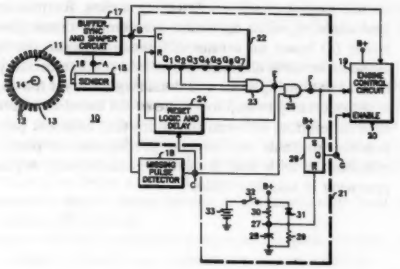
1. A dynamic pressure test unit comprising:
a water supply pump for supplying water;
a flask connected to said water supply pump for receiving said water;
a turbine flowmeter connected for measuring the amount of water flow to said flask and for supplying frequency pulses directly proportional to the volume flow rate from said pump to said flask;
linearizer means connected to said flowmeter for minimizing the effects of magnetic drag and increasing the range and linearity of said flowmeter, said linearizer means for providing pulse output signals whose frequency is proportional to the volume flow rate from said pump to said flask;
a frequency to DC transmitter connected to receive the pulse output signals from said linearizer means and providing an output DC signal proportional to the frequency of the received pulse signals;
a variable gain amplifier connected to receive said frequency to DC transmitter DC output for adjusting the gain of said DC output and providing output signals;
a pressure transducer connected for measuring the pressure of water in the flask and for supplying an output of continuous electrical signals indicative of said pressure of water;
a divider network connected to receive said variable gain amplifier output signals and said pressure transducer output signals and providing an output electrical signal indicative of a quotient of the received signals; and
a stripchart recorder connected to receive said output electrical signal from said divider network for displaying said received signal as it varies over a time frame.

4,553,426
REFERENCE PULSE VERIFICATION CIRCUIT ADAPTABLE FOR ENGINE CONTROL

Zbynek A. Capurka, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 23, 1984, Ser. No. 613,653
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—116 **15 Claims**

1. A reference pulse verification circuit comprising;
means for producing reference pulses corresponding to the occurrence of predetermined reference rotational positions of a rotating shaft,
means for producing a pulse train comprising a plurality of pulse train pulses which occur between the occurrence of said reference rotational positions of said shaft, and
means for receiving both said reference pulses and said pulse train pulses and verifying the correctness of the occurrence of said reference pulses by providing a verified

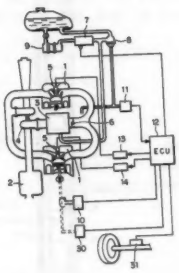


reference pulse in response to each reference pulse which occurs at substantially a predetermined number of pulse train pulses after the occurrence of a preceding reference pulse, whereby spurious reference pulses can be differentiated from true reference pulses.

4,553,427
ROTATIONAL REFERENCE POSITION DETECTION APPARATUS

Hiroaki Kuraoka; Toshinori Mizuno, both of Oubu; Katsumasa Matsui, and Masahiro Ohba, both of Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 7, 1984, Ser. No. 587,011
Claims priority, application Japan, Mar. 8, 1983, 58-37785; Mar. 14, 1983, 58-42974
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—117.3 **8 Claims**



1. An engine crank angle determining arrangement comprising:
a rotatable member coupled to a crankshaft of said engine so as to rotate in synchronism therewith and having a plurality of spaced sensible elements, said sensible elements being arranged with uniform angular spacing except that one such element shall be missing;
detecting means for detecting the rotation of said sensible elements and generating an angle signal indicative thereof, said angle signal including information as to the times said sensible elements are in a predetermined positional relationship with said detecting means;
sensor means for sensing at least one engine condition and generating an engine condition signal indicative thereof; and

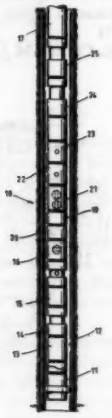
an electronic control device, coupled to receive said engine condition signal and said angle signal, said electronic control device including an engine condition detecting means for determining, responsive to said engine condition signal, whether said engine is operating in a "low" state or not, and crank angle determining means, coupled to said engine condition detecting means, for processing said angle signal to determine a reference crank position either (a) based on a time difference between the times adjacent sensible elements are in said predetermined positional relationship with said detecting means if the engine is not operating in said low state or (b) based on a ratio of time differences between the times that adjacent pairs of sensible elements are in said predetermined positional relationship with said detecting means if said engine is operating in said low state.

4,553,428

DRILL STEM TESTING APPARATUS WITH MULTIPLE PRESSURE SENSING PORTS

James M. Upchurch, Sugar Land, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Nov. 3, 1983, Ser. No. 549,361
Int. Cl.⁴ E21B *47/06*
U.S. Cl. 73—152 **12 Claims**



1. Well testing apparatus, comprising:

a tubular housing having a bore therethrough;

a valve for opening and closing said bore;

a pressure transducer mounted in the wall of said housing for sensing well fluid pressure and providing an indication thereof;

first, second and third passages in said wall for respectively communicating said transducer with fluid pressures at first, second and third locations external of said wall, each of said passages joining at least one other of said passages; and

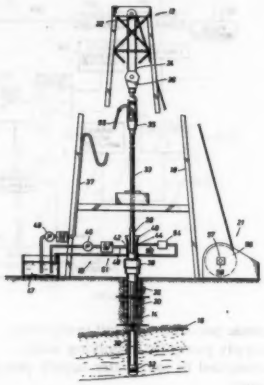
user settable plug means positioned at said passage junctions for communicating a selected one of said first, second and third location pressures with said pressure transducer.

4,553,429

METHOD AND APPARATUS FOR MONITORING FLUID FLOW BETWEEN A BOREHOLE AND THE SURROUNDING FORMATIONS IN THE COURSE OF DRILLING OPERATIONS

John L. Evans; George F. Gehrig, and Jerry M. Speers, all of Houston, Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Feb. 9, 1984, Ser. No. 578,721
Int. Cl.⁴ E21B *49/00*
U.S. Cl. 73—155 **14 Claims**



1. A method for monitoring fluid flow between a borehole containing drilling fluid and the surrounding subterranean formations in the course of moving a drill string within the borehole, the method comprising the steps of:

transferring drilling fluid between said borehole and a drilling fluid handling system at a rate adequate to maintain the drilling fluid at a substantially constant reference level in said borehole;

generating a first signal representing the rate at which drilling fluid is added to the borehole by the drilling fluid handling system;

generating a second signal representing the rate at which drilling fluid is removed from the borehole to the drilling fluid handling system;

generating a third signal representing the net rate at which the fluid capacity of the borehole changes in response to changes in the length of the drill string within the borehole; and

summing the first, second and third signals to obtain a fourth signal substantially representing the rate at which fluid is transferred between the borehole and the formations surrounding the borehole.

4,553,430

ILLUMINATED WIND SOCKS FOR AIRPORTS

Walter E. Behrens, Rte. 6, Country Club Rd., Minot, N. Dak. 58701

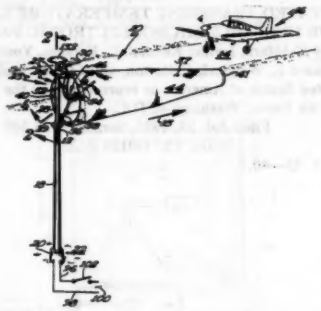
Filed Jun. 29, 1984, Ser. No. 626,522
Int. Cl.⁴ G01W *1/00*
U.S. Cl. 73—188 **8 Claims**

1. A vibration resistant, glowing wind indicator for indicating nighttime wind conditions and usable with a rigid upright post and with an electric power source with first and second energizable electric power wires comprising:

a wind sock assembly mountable to the post for swinging movement about a vertical axis in response to wind conditions, said wind sock assembly including a circular rim, a wind sock formed of translucent material carried on said rim, said wind sock having interior and exterior surfaces

and a generally horizontal central axis coaxial with said circular rim;

a light fixture connectable to the power source and mounted on said wind sock assembly and spaced laterally outward from said vertical axis to rotate with said assembly about said vertical axis and being stationary relative to said swingable wind sock to thereby reduce destructive vibration of said light fixture, said fixture including a bulb socket and a plurality of arms extending outwardly from said bulb socket and each said arm having a remote end attached to said circular rim to retain said socket along said horizontal central axis of said wind sock and con-



fronting said interior surface of said wind sock and first and second electrical conductors electrically connected with said sock and electrically connectable to said power source; and

a light bulb operatively installed in said bulb socket and spaced laterally outward from said vertical axis to swing with said wind sock assembly thereby reducing destructive vibration of said bulb, said bulb confronting said interior surface of said wind sock to continually and uninterruptedly illuminate said interior surface during swinging of the assembly and cause said outer surface of said translucent material to glow in the night, making said glowing wind sock highly visible to observers.

4,553,431

DETERMINING AND INDICATING THE QUANTITY OF A STORED MATERIAL

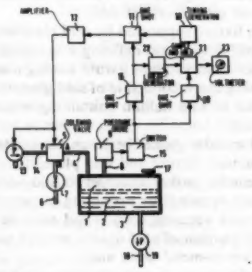
Walter Nicolai, Maria Louisen Strasse 144, D-2000 Hamburg 60, Fed. Rep. of Germany

Division of Ser. No. 424,663, Sep. 27, 1982, abandoned. This application Apr. 30, 1984, Ser. No. 605,500

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1982, 3206130

Int. Cl.⁴ G01F *23/14*

U.S. Cl. 73—290 B **19 Claims**



1. Apparatus for determining and indicating the quantity of a stored liquid or solid product contained in a closed container of constant volume together with a gaseous or vaporous filling material filling the residual volume of the container interior and held under a limitedly variable pressure said residual volume serving as a measure of the quantity of the product stored in said container, said apparatus comprising:

a pressure to voltage converter connected to said residual volume for generating a voltage signal indicative of the pressure in said residual volume;

voltage responsive switching means connected to said converter and adapted to assume a first switching state when said converter voltage signal indicates the pressure within said residual volume is below a first preset value and to assume a second switching state when said converter voltage signal indicates the pressure within said residual volume is above a second preset value;

pneumatic source means having an automatic switch-on and switch-off control;

means defining a pressure compensation path between the residual volume and a reference pressure location;

a controllable valve adapted to assume a first value state in which said pressure compensation path is blocked and to assume a second value state in which said pressure compensation path is open;

control means for causing said valve to assume the first value state and switching on said pneumatic source means and for subsequently causing said valve to assume the second value state and switching off said pneumatic source means; and

means responsive to operation of said control means for indicating the pressure within said residual volume.

4,553,432

TEMPERATURE-HUMIDITY SURVEILLANCE EQUIPMENT

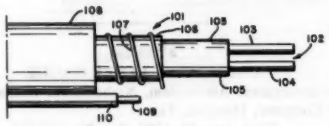
Reinhold Barlian, Dieselstrasse 6, D-6990 Bad Mergentheim, Fed. Rep. of Germany, and Martin Fischle, Bad Mergentheim, Fed. Rep. of Germany, assignors to Reinhold Barlian, Bad Mergentheim, Fed. Rep. of Germany

Filed Jul. 11, 1983, Ser. No. 512,444

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1982, 3225921

Int. Cl.⁴ G01N *25/64, 27/14*

U.S. Cl. 73—336 **57 Claims**



1. A measurement cable surveillance provision for pipe-like containers of fluids for continuous temperature and humidity sensing comprising

a first electrical conductor wire;

a second electrical condutor wire running substantially parallel to the first electrical conductor wire and where the first and the second conductor wire are substantially similar;

a hygroscopic insulator means disposed between the first and the second electrical conductor wires for providing humidity control and for spacing said conductor wires at a predetermined distance relative to each other;

a humidity permeable insulator surrounding the hygroscopic insulating means and the first and second electrical conductor wires;

a helically disposed resistance wire for temperature sensing purposes running on the outside of the humidity permeable insulator and about along the electrical conductor

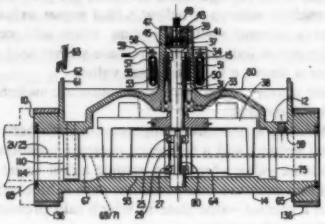
wires and disposed at a spaced distance from the first and the second electrical conductor wires.

4,553,433

ROTARY METER WITH INTEGRAL INSTRUMENT HOUSING

Irwin A. Hicks, Radnor, Pa., assignor to The Singer Company, Stamford, Conn.

Filed May 13, 1983, Ser. No. 494,598
Int. Cl.⁴ G10F *15/14*
U.S. Cl. 73—273 **8 Claims**



1. In a rotary fluid meter, the combination of a lower housing and an upper housing together forming a pressure hull for the meter for connection in a pipeline, the lower and upper housings being adapted to contain the rotating measurement elements of the meter on vertical axes of rotation, and a cover adapted for connection to said upper housing to define therewith an enclosure outside said pressure hull for containing fluid measurement instruments, said upper housing being formed with integral instrument mountings outside said pressure hull adapted to be within said enclosure when said cover is connected to said upper housing, said upper and lower housings being joined along a plane which coincides with the centerline of said pipeline.

7. The combination according to claim 1 wherein said meter includes an output shaft and said upper housing includes a tower extending into said enclosure, said tower being adapted to contain said output shaft therein, and further including an electrical generator coupled to said output shaft through said tower, said electrical generator having rotating field magnets mounted on said output shaft inside said tower within said pressure hull and a stationary coil surrounding said tower within said enclosure.

4,553,434

CAPACITIVE LEVEL GAUGE

Klaas Spaargaren, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 19, 1983, Ser. No. 524,514
Claims priority, application United Kingdom, Sep. 9, 1982, 8225676
Int. Cl.⁴ G01F *23/26*
U.S. Cl. 73—304 C **12 Claims**

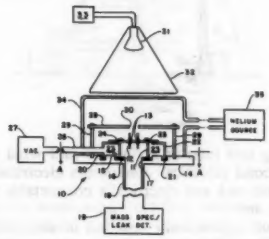
1. An apparatus for use in measuring the level of a fluid in a container, said apparatus comprising: first means adapted for capacitive measurements and having a plurality of individual sections with each of said sections having a predetermined size; second means adapted for capacitive measurements, said first and second means being adapted to be positioned in a fluid at a predetermined distance from one another; and a screen positioned between said first and second means having openings therein proximate said sections of said first means to define areas of transmission between said sections and said second means.

4,553,435

ELEVATED TRANSIENT TEMPERATURE LEAK TEST FOR UNSTABLE MICROELECTRONIC PACKAGES

Harold Goldfarb, Irvine; Kenneth L. Perkins, Yorba Linda, and Bernard L. Weigand, Fullerton, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 19, 1983, Ser. No. 515,240
Int. Cl.⁴ G01M *3/20*
U.S. Cl. 73—40.7 **2 Claims**



1. Apparatus for detecting leaks through glass-to-metal seals in an electronic device or the like, comprising:

a. a substantially flat base plate having upper and lower surfaces and including means defining a first central opening therethrough between said upper and lower surfaces;

b. a first annular gasket on said upper surface of said plate surrounding said first opening for sealably supporting said device around a peripheral portion thereof;

c. helium detector means operatively connected to said lower surface of said plate at said first opening, said helium detector means including a source of vacuum providing a first vacuum seal between said device and said first gasket and whereby a first side of said glass-to-metal seals of said device is exposed to said helium detector means;

d. a source of helium;

e. a shroud, supported by said plate and enclosing said device, and conduit means operatively connecting said shroud to said source of helium for providing an atmosphere containing helium over said device at the second side of said glass-to-metal seals;

f. a vacuum fixture supported by said plate intermediate said shroud and device and defining a marginal space around said device, said vacuum fixture having a second opening for exposing the second side of said glass-to-metal seals of said device to said helium containing atmosphere within said shroud;

g. a second annular gasket between the contacting surfaces of said vacuum fixture and said plate;

h. a third annular gasket attached to said vacuum fixture at said second opening for providing a second vacuum seal between said vacuum fixture and said device around a peripheral portion of said device around said second side of said glass-to-metal seals; and

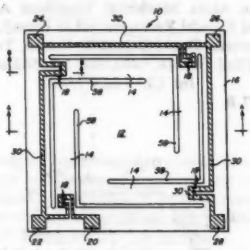
i. a source of vacuum operatively connected to said vacuum fixture for evacuating said marginal space around said device and thereby providing said second vacuum seal between said vacuum fixture and said device at said third

gasket and a third vacuum seal between said vacuum fixture and said plate at said second gasket by the pressure difference between the vacuum maintained within said marginal space and the pressure of said helium containing atmosphere, and for preventing said helium from permeating said third seal between said device and said plate at said first gasket.

4,553,436
SILICON ACCELEROMETER

Jan I. Hansson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 9, 1982, Ser. No. 440,462
Int. Cl.[4] G01P *15/12*
U.S. Cl. 73—517 R **6 Claims**



1. An acceleration sensor comprising:

a substantially planar semiconductor support frame;

four flexible, elongate semiconductor support members each rigidly attached at a first end to said support frame, and disposed substantially perpendicular to each adjacent support member;

a semiconductor deflection mass positioned internally of and movable relative to said support frame, in a direction perpendicular to the plane of said support frame, and attached to a second end of said support members; and

piezoresistive means for sensing stress in said support members, said piezoresistive means oriented with respect to a crystalline plane and capable of providing a differential output as a function of the magnitude and direction of bending of said support members.

4,553,437
HYBRID NON-INVASIVE ULTRASONIC IMAGING SYSTEM

Ajay K. Luthra; Saleem Kassam, both of Bala Cynwyd, and J. William Mauchly, Ambler, all of Pa., assignors to Imaging Associates, Villanova, Pa.

Filed Jan. 30, 1984, Ser. No. 574,883
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—602 **14 Claims**

1. A method for producing signals for forming images of a predetermined scene within a body comprising:

(a) projecting acoustic energy from a predetermined small aperture onto a plurality of parts of said scene in sequence,

(b) receiving acoustic energy reflected from said respective parts in sequence and producing corresponding first electrical signals;

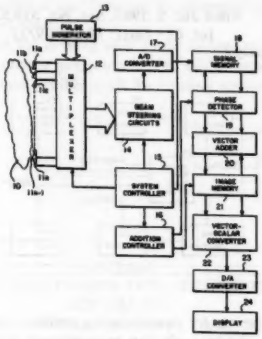
(c) processing said first electrical signals to produce first image signals in which signals corresponding to echoes from the same targets are additively combined

while the entire vectorial information represented by said signals is preserved,

(d) projecting acoustic energy from at least one other small aperture onto said plurality of parts of said scene in said sequence,

(e) receiving acoustic energy reflected from said parts in response to step (d) and producing at least corresponding second electrical signals,

(f) processing said second electrical signals to produce second image signals in which signals corresponding to echoes reflected from the same targets additively combine



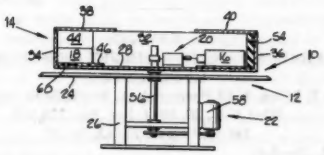
while the entire vectorial information represented by said second signals is preserved, and

(g) combining all of said image signals vectorially thereby to produce an output signal which is to be supplied to a utilization circuit.

4,553,438
CENTRIFUGAL CARTON TESTER

Raymond L. Dawson, Monroe; Clayton Dodd, Farmerville; Bobby E. Harrell, and Grady E. Lee, both of West Monroe, all of La., assignors to Manville Service Corporation, Denver, Colo.

Filed Apr. 19, 1984, Ser. No. 601,893
Int. Cl.[4] G01N *3/08*
U.S. Cl. 73—830 **5 Claims**



1. A centrifugal test apparatus for determining the failure point of a carton for packaging bottles or cans comprising:

a box for receiving a test carton and a counterweight, said box having a bottom wall, first and second sidewalls, first and second end walls, and first and second lids which overlay opposite first and second end portions of said box where the test carton and the counterweight are located during testing to prevent fragments from being thrown from said box during testing;

said box being affixed at its horizontal balance point to a drive shaft, said drive shaft being driven by a variable speed motor to regulate the rotational speed of said box and the force exerted on the test carton;

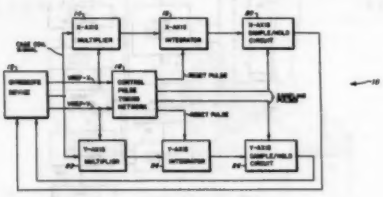
means for locating the test carton in said first end portion of said box in a spaced relationship to said first end wall and for attaching a handle of the test carton to a force gauge, said locating and attaching means simulating the gripping of the test carton by a person; and

said force gauge being affixed in said box.

4,553,439
APPARATUS FOR DEMODULATING GYROSCOPE POSITION INFORMATION

Ronald Hooper, Dahlgren, and Kenneth Nichols, Fredericksburg, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 5, 1983, Ser. No. 510,535
Int. Cl.⁴ G01C *19/30, 19/32*
U.S. Cl. 74—5.4 **7 Claims**



1. An apparatus for demodulating position information from a gyroscope device including an associated gyroscope having a predetermined spin frequency, the position information consisting of a cage coil signal and a spin reference signal, said apparatus comprising:

first means operatively connected to said gyroscope device for multiplying the cage coil signal and the spin reference signal;

second means operatively connected to said first means for integrating over a predetermined integration interval the resulting signal from the output of said first means;

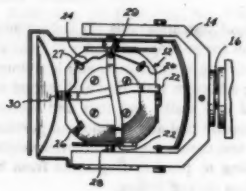
third means operatively connected to said second means for sampling and holding at the end of the predetermined integration interval the output signal of said second means; and

fourth means operatively connected at its input to said gyroscope device and at its outputs to said second means and to said third means for generating a sample pulse for proper operation of said third means and a reset pulse for resetting of said second means to zero at a time slightly after the end of the predetermined integration interval.

4,553,440
LIMIT MEANS FOR AIR JET RESPONSIVE GYROSCOPES

Caesar J. Miles, 1715 Portage Ave., South Bend, Ind. 46616

Filed Nov. 20, 1981, Ser. No. 323,193
Int. Cl.⁴ G01C *19/52, 19/30*
U.S. Cl. 74—5.43 **3 Claims**

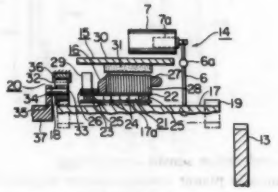


1. In an attitude indicator for aircraft including a gyro which is contained in a housing having an air inlet opening and a plurality of air outlet openings, a gimbal joint mounting said gyro housing, said gyro spinning in response to air drawn through said inlet opening and outlet openings by a vacuum pump, valve means pivotally connected to said gyro housing and responsive to the position of said gyro housing to regulate the rate of flow of air from said outlet openings in response to movement of said aircraft from a selected horizon reference attitude, and limit means for controlling the amount of travel of said valve means, the improvement wherein said limit means includes a light-weight flexible strand having a breaking point greater than the force exerted by pivotal movement of the valve means, said strand being anchored at spaced parts thereof to said gyro housing and to said valve means at a midpoint of said strand whereby travel of said valve means is limited by the length of said strand between the points of connection thereof to said housing and to said valve means, said valve means pivoting substantially without restraint between said limits.

4,553,441
STARTING SYSTEM FOR INTERNAL COMBUSTION ENGINE

Isao Hamano; Akira Morishita; Yoshifumi Akae; Toshinori Tanaka, and Kiyoshi Yabunaka, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 18, 1983, Ser. No. 543,455
Int. Cl.⁴ F02N *11/00*
U.S. Cl. 74—7 R **6 Claims**



1. A starting system for an internal combustion engine, comprising a stator; a cylindrical armature rotor which is arranged on an inner peripheral side of said stator with a predetermined gap therefrom; an overrunning clutch which includes a first cylindrical clutch body that is mounted on an inner periperal surface of said rotor, and a second cylindrical clutch body that is clutch-coupled with said first clutch body; a rotary shaft which is penetratingly arranged on an inner peripheral portion of said second clutch body of said overrunning clutch, which is axially movable relative to said second clutch body and which rotates along with said second clutch body; a pinion which is disposed at one end of said rotary shaft and which is brought into meshing engagement with a ring gear of the engine being a first load device; a power transmission mechanism which is disposed at the other end of said rotary shaft and which transmits power to a second load device; and a shift lever which slides said rotary shaft in the axial direction thereof so as to connect a turning force of said rotary shaft to either of the first load device or the second load device.

4,553,442
STARTER FOR HEAT ENGINE COMPRISING A REINFORCED SUPPORT

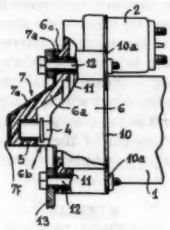
Alfred B. Mazzorana, Venissieux, France, assignor to Societe Paris-Rhone, Lyons, France

Filed May 16, 1983, Ser. No. 494,846
Claims priority, application France, May 18, 1982, 82 08981
Int. Cl.⁴ F02N *15/06*
U.S. Cl. 74—7 A **6 Claims**

1. A starter assembly for mounting to the casing of an engine, the assembly including an electric motor having an axial shaft for extending through an opening in the casing and the shaft supporting a starter pinion moveable thereon to an engaged position, and the assembly including relay contactor means operative to move the pinion on the shaft, the starter assembly further comprising:

a metal base plate fixed to the motor and the contactor and having an axial opening through which the shaft extends;

a support member made of material which is less than fully rigid, the support member being disposed against the plate and having a shoulder disposed to abut the casing at its opening and having an axial opening to receive the shaft and pinion, and the support member having a nose portion carrying a bearing supporting the motor shaft and having a transverse opening opposite the pinion when in said engaged position;



a metal reinforcing shell shaped to cover and closely fit said nose portion and having a transverse cut-out registering with the transverse opening of the nose portion, and having a flange shaped to lie against said shoulder portion and against said casing; and

the plate and the support member and the shell flange and the casing having multiple aligned screw holes, and the assembly having mounting screws extending through the holes and mounting the assembly to the engine.

4,553,443

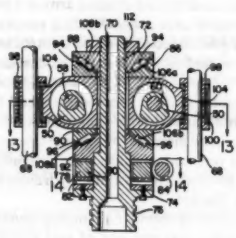
HIGH FREQUENCY VIBRATORY SYSTEMS FOR EARTH BORING

Andre M. Rossfelder, La Jolla, and Peter A. Jung, San Diego, both of Calif., assignors to Geomarex, La Jolla, Calif.

Filed Nov. 19, 1982, Ser. No. 443,069

Int. Cl.[4] B06B *1/16*; B23Q *5/027*

U.S. Cl. 74—22 R **1 Claim**



1. A vibrating system adapted to be attached to a body, comprising:

a housing;

a pair of wheel means including axle means disposed parallel to each other mounted to said housing;

a mass secured to at least one of the wheel means so that the center of gravity of that wheel means is offset with respect to its axis of rotation;

means for rotating one of the wheel means including a flexible shaft means coupled to the axle of the wheel means being so rotated;

endless belt means connecting the pair of wheel means so that when one of the wheel means rotates the belt means transmits rotational motion to the other wheel means, said belt means being adapted to dampen vibrations propagating between said wheel means so that the frequency of vibrations in said body can exceed 150 hertz for sustained periods without damaging the rotating means or the belt means;

thrust bearings mounted to said housing to allow said body to rotate while vibrating;

a clutch mounted to said housing for disengaging said body from further rotation;

a flexible shaft for driving said wheel means; and

a worm and crown gear mounted to said housing and also driven by said flexible shaft for causing rotation.

4,553,444

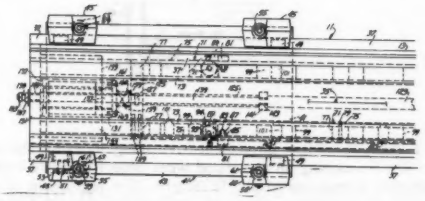
RETRACTOR MECHANISM FOR ARTICLE TRANSFER APPARATUS

Leland F. Blatt, 31915 Groesbeck Hwy., Fraser, Mich. 48026

Filed Oct. 17, 1983, Ser. No. 542,746

Int. Cl.[4] F16H *21/44*

U.S. Cl. 74—110 **10 Claims**



1. In a multiple stroke retractor mechanism for article transfer apparatus having an elongated body having a central longitudinal axis suspended from a support, a pair of parallel spaced tracks depending from, projecting laterally outward of and secured to said body along its length upon opposite sides of said axis, a continuously reciprocal carriage adapted to mount an article gripping tool underlying and guidably mounted upon said tracks for reciprocal movements, a pair of depending laterally spaced first racks upon said body along its length, a pair of laterally spaced second racks upon said carriage along its length opposed to said first racks, a reciprocal pinion carrier between said body and carriage for driving said carriage including longitudinally spaced laterally opposed pairs of pinions in mesh with and interconnecting said first and second racks respectively, a power means upon said body connected to and reciprocating said pinion carrier;

the improvement comprising said pinion carrier being continuously reciprocal and including an elongated upwardly opening channel having opposed first side plates;

said pairs of pinions being journaled upon said side plates;

longitudinally spaced laterally opposed pairs of first cam followers extending outwardly of, journaled upon said channel upon horizontal axes and supportably mounted upon said tracks, respectively, constraining reciprocal movements of said pinion carrier to a single horizontal plane; and

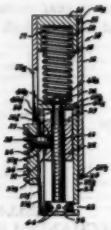
longitudinally spaced laterally opposed pairs of second cam followers extending outwardly of and journaled upon said channel upon vertical axes and retainingly engaging the inner sides of said tracks respectively, constraining the reciprocal movements of said pinion carrier to a single vertical plane.

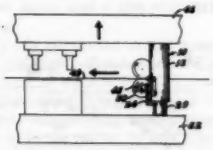
4,553,445

INTERMITTENT MOVEMENT-CONTROLLING INDEXING SHUTTLE DEVICE

Joe C. Holbrook, R.R. 2, Box 167, Clayton, Ind. 46118, and Bobby L. Shepard, R.R., North Vernon, Ind. 47265

Filed Mar. 20, 1984, Ser. No. 585,452
Int. Cl.[4] F16H 27/02; B26D 5/22; B65H 35/04
U.S. Cl. 74—130 11 Claims





1. An intermittent movement-controlling indexing shuttle device, for causing an associated work object to move intermittently in response to shuttle reciprocation movement of an associated mechanism, the shuttle device comprising, in combination:

a carrier means adapted to be operatively connected to the associated mechanism, for achieving reciprocation movement cyclically in response to the cycles of shuttle movement of the associated mechanism;

a shuttle assembly carried by the carrier means by means permitting relative movement thereof;

the carrier means and the shuttle assembly being provided with co-operative abutment means which when in operatively abutting engagement limit relative movement of the shuttle assembly outwardly of the carrier means;

spring means operatively bottoming against the carrier means and the shuttle assembly, biasing the shuttle assembly outwardly of the carrier means; and

a gear means carried by the shuttle assembly for drivingly engaging associated gearing of the drive means by which driving actuation is imparted to the work object;

the components providing that (a) in a first stage of actuation the carrier means and the shuttle assembly are in a relatively extended relative position, and while in such relative position are moved in a first direction by the associated mechanism, (b) in a second stage of actuation the shuttle assembly is caused to stop, but the carrier means is permitted to keep moving in the first direction, and thus the carrier means and the shuttle assembly are moved toward a relatively non-extended relative position against the bias of the said spring means, and causing the spring means to be compressed, and (c) in a third stage of actuation, the carrier means is moved in the opposite direction by the associated mechanism, but the compression in the spring means causes the shuttle assembly to not move correspondingly in said opposite direction for the portion of the carrier means' movement in said opposite direction and instead causes the shuttle assembly to move relatively to the carrier means and toward extended position, and to remain in its stopped condition of the second stage, maintaining a rest or dwell condition of the shuttle assembly's gear means and thus also of the associated gearing of the work object's drive means during that portion of the movement of the carrier means in said opposite direction, but in continued movement of the carrier means in said opposite direction the shuttle assembly and its gear means are also moved by their retention by the carrier means in said opposite direction, once relative outward movement of the shuttle assembly with respect to the carrier means has brought the outward-movement-limiting co-operative abutment means into operatively abutting engagement;

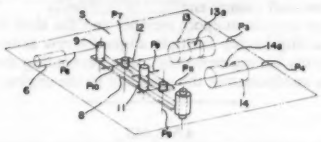
the device thereby imparting an intermittent power stroke output, from the shuttle assembly's gear means to the work object's drive means, by which intermittent power stroking is accomplished which is adjustably different, in stroke length and in the timing thereof from the intermittent shuttle movement of the associated mechanism although cyclically co-ordinated therewith.

4,553,446

CONTROL DEVICE

Yoshitaka Matsubara, Osaka, Japan, assignor to Kubota, Ltd., Osaka, Japan

Filed Oct. 31, 1983, Ser. No. 547,529
Claims priority, application Japan, Jun. 11, 1983, 58-89348
Int. Cl.[4] G05G 9/00
U.S. Cl. 74—471 R 1 Claim



1. A control device comprising a control arm,

one end of said control arm being pivoted about a fixed support shaft,

a control means including a rod pivotably secured at one end thereof to the opposite end of said control arm,

a first pin secured to said control arm at a mid-point linearly of said control arm and extending perpendicular thereto,

a swing link positioned above said control arm and pivotably secured on said first pin at the midsection of said swing link,

first and second control members spaced from each other and secured parallel with each other,

said first control member pivotably connected at one end thereof to one end of said swing link and pivotably connected at its other end to a first hydraulic control valve for operation thereof,

said second control member pivotably connected at one end thereof to the opposite end of said swing link a distance from said first pin equal to said pivotable connection of said first control member and pivotably connected at its other end to a second hydraulic valve for operation thereof,

a lock member positioned between said first and second control members and adapted to selectively lock one of said first and second control members in a fixed position while permitting parallel movement of the non-locked control member,

said swing link being positioned parallel with said control arm with their linear axis in the same vertical plane when said first and second control members and said control means are in their neutral position,

whereby a central axis of said rod, said swing link and a central axis of said first and second control members are located substantially on a single plane.

4,553,447
PRESSURE SUPPORT MEANS IN RACK AND PINION STEERING

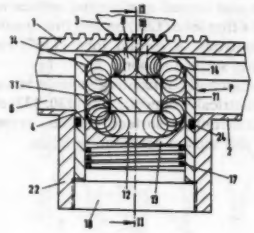
Ansgar Betz, Schwabisch Gmund, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Nov. 30, 1983, Ser. No. 556,389

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1982, 3244531

Int. Cl.⁴ F16H *1/04*

U.S. Cl. 74—422 **20 Claims**



2. In a rack and pinion mechanism having a housing (2) and pressure means (P) therein comprising parallel endless ball arrays (B) on respective sides of the median plans (M) of a rack (1);

including coacting races (10, 10') for said ball arrays on respective sides of said rack and on respective sides of said pressure means for rolling support of said rack;

the improvement wherein:

the ball arrays are in planes normal to the rack:

the coacting ball races on each side of said rack and pressure means are in ball retaining face to face relation with the races of said rack and the coacting races of said pressure means being disposed so that support forces on respective flights of balls therebetween are in planes (A) angularly related to respective sides of the median plane (M) of said rack for ball support of said rack in normal and lateral directions.

4,553,448
DUAL-RATE CONTROL ASSEMBLY

Stephen A. Youngers, Clearwater, and Robert G. Draney, Wichita, both of Kans., assignors to J. I. Case Company, Racine, Wis.

Filed Jun. 2, 1983, Ser. No. 500,430

Int. Cl.⁴ G05G *11/00*

U.S. Cl. 74—480 R **11 Claims**

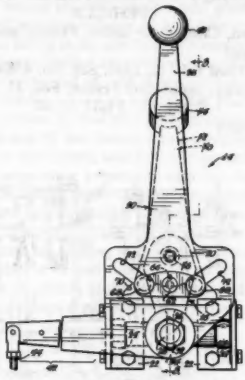
1. A dual-rate control assembly for an implement, comprising:

a control lever support member adapted to be mounted on said implement;

a first control lever pivotally connected to said support member for pivotal movement about a first axis, said control lever including an input portion adapted to be manipulated by an operator, and an output portion adapted to be operatively connected with associated means to be controlled, whereby a given angular movement of said input portion about said first axis results in movement of said output portion about said first axis at a first rate;

a second control lever pivotally mounted on said support member and adapted for manipulation by an operator, said second control lever being pivotally mounted on said support member for pivotal movement about a second axis spaced from and parallel to said first axis; and

cam means operatively interconnecting said second control lever with said first control lever comprising cam pin means mounted on one of said control levers and cooperating cam opening means defined by the other of said control levers, whereby said given angular movement of



said second lever moves said first lever about said first axis at a second rate.

4,553,449
APPARATUS FOR ACTIVATING A BOWDEN CABLE

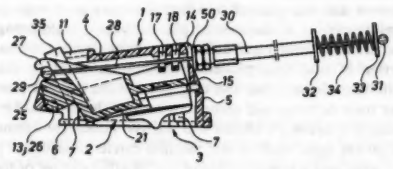
Heinrich Korn, Gersthofen, Fed. Rep. of Germany, assignor to Röder GmbH, Sitzmöbelwerke, Fed. Rep. of Germany

Filed Sep. 27, 1983, Ser. No. 536,326

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1982, 8227885[U]

Int. Cl.⁴ F16C *1/10*

U.S. Cl. 74—501 R **18 Claims**



1. An apparatus for activating a Bowden cable, comprising:

a double-armed activating member; an insert body;

mounting element means arranged on the insert body for pivotally mounting the activating member to the insert body; and

latch means slidably mounted on the activating member, said latch means being slidable from a first position wherein the activating member can pivot within the insert body to a second position wherein the latch means engages with the insert body to prevent the activating member from pivoting therein;

said activating member, comprising:

an activating arm; and

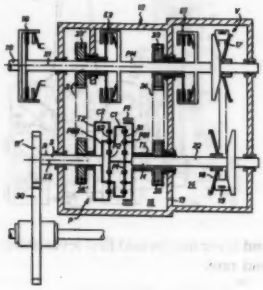
a pulling arm which includes a means for engaging the Bowden cable.

4,553,450

TRANSMISSION BETWEEN A POWER INPUT AND AN OUTPUT SHAFT SUITABLE FOR AN AUTOMOBILE VEHICLE

Michel Gizard, Croissy sur Seine, France, assignor to Valeo, Paris, France

Filed Feb. 22, 1983, Ser. No. 468,636
Claims priority, application France, Feb. 22, 1982, 82 02888
Int. Cl.⁴ F16H *37/00*
U.S. Cl. 74—689 **12 Claims**



1. A transmission for transmitting power from a power input shaft to an output shaft, said transmission being mounted in housing and comprising a variable speed pulley drive having a driving pulley, a driven pulley and a transmission belt therebetween, the driving pulley being directly driven by the power input shaft, a planetary gear unit having four elements including a permanently active input element connected to the driven pulley and a permanently active output element connected to said output shaft, and first and second switching elements, control means for making a selected one of said switching element active while the non-selected is passive and making the non-selected one active while the selected one is passive, said planetary gear unit comprises first and second simple planetary gear trains, each of said planetary gear trains comprising a planetary gear, a ring gear and a satellite carrier having satellite gears meshing with the associated planetary gear and the ring gear, the planetary gears of said planetary gear trains being connected together and define the input element, the ring gear of said first planetary gear train and the satellite carrier of the second planetary gear train being connected to each other and define the output element, the satellite carrier of said first planetary gear train defining the first switching element and the ring gear of the second planetary gear train defining said second switching element, said control means comprising a clutch and a drive means for connecting the power input shaft to said satellite carrier of said first planetary gear, and a brake for fixing said satellite carrier of the first planetary gear against rotation to obtain a reverse drive, said clutch being engageable to define a forward gear range and disengageable when said brake fixes said satellite carrier of the first planetary gear train against rotation.

4,553,451

PIN CONTROLLED RETAINER FOR EPICYCLIC TRANSMISSION

Robert G. Distin, Jr., and Thomas J. Lang, both of Louisville, Colo., assignors to Advanced Energy Concepts '81 Ltd., Boulder, Colo.

Filed Feb. 10, 1984, Ser. No. 578,931
Int. Cl.⁴ F16H *1/28*
U.S. Cl. 74—805 **12 Claims**

1. An epicyclic speed reducing transmission, comprising:

first gear means (**70**) having a first surface region (**72**);

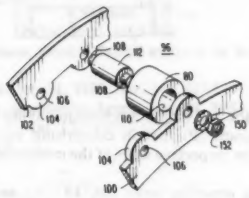
second gear means (**50**) having a second surface region (**53**) which confronts said first surface region;

cam means (**10, 30**) for orbitably driving one of said gear means and said corresponding confronting surface region;

a set of cylindrical rollers (**80**) disposed between said first and second confronting surface regions for transmitting torque therebetween;

said first and second confronting surface regions each comprising a series of lobes (**126**) and recesses (**128**) shaped and arranged such that a first recess (**128'**) on said first confronting surface region confronts a second recess (**128''**) on said second confronting surface region and also such that a first lobe (**126'**) on said first confronting surface region confronts a second lobe (**126''**) on said second confronting surface region;

said first and second confronting recesses being on a substantially diametrically opposite side (**130, 132**) of said first and second confronting surface regions, respectively, than said first and second confronting lobes;



said first and second confronting surface regions being further shaped and arranged such that only one of said cylindrical rollers can be contained between said confronting recesses and only one of said cylindrical rollers can be contained between said confronting lobes;

a retainer (**96**) for retaining said plurality of cylindrical rollers in spaced relationship between said first and second confronting surface regions, said retainer comprising:

first and second rings (**100, 102**), said first ring having a series of holes (**106**) therein which confront corresponding holes in said second ring;

a series of roller pins (**108, 112**) having opposite ends (**108**) supported by said first and second rings in said holes;

said cylindrical rollers being rotatably supported by said series of pins so as to confront said first and second confronting surface regions and transmit torque therebetween.

4,553,452

METHOD FOR PRODUCING SECURITY KEYS HAVING CLOSURE POSSIBILITIES DIFFERING FROM ONE ANOTHER

Ernst Keller, Untere Schwandenstr. 22, CH-8805 Richterswil, Switzerland

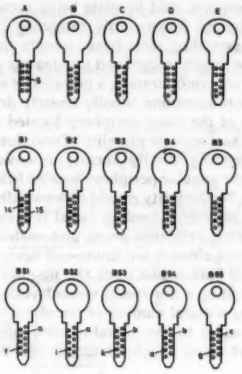
Filed Nov. 9, 1983, Ser. No. 550,115
Int. Cl.⁴ B21K *13/00*
U.S. Cl. 76—110 **4 Claims**

1. A method for producing a plurality of security keys having closure possibilities differing from one another, wherein spring-loaded pin tumblers supported in radially extending bores in the cylinder of a lock, said cylinder including a cylinder plug having a key path are displaceable by means of a security key to permit rotation of the cylinder plug, the security key being insertable into the key path of the cylinder plug and capable, by means of bores, of effecting a correctly displaced position of the rows of pin tumblers, wherein at least one of the bores has two or more different shapes for the head of an associated pin tumbler, comprising:

producing different bore patterns in said plurality of keys, each bore pattern having the same number of bore loca-

tions, the positional arrangement of said bore hole locations being different in each of said patterns;

selecting, in each bore pattern, a prespecified number of bore hole locations, said prespecified number being at least 1;



varying the position within said bore hole pattern of said preselected number of bore hole locations;

additionally varying at each specified bore location, a prespecified number of bore shapes differing from one another, said prespecified number being at least 1.

4,553,453

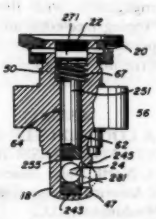
STEPLESS WRENCH INCLUDING QUICK RELEASE MECHANISM

John D. Dempsey, 2024 Rivermont Ave., Lynchburg, Va. 24503, and Jock D. Dempsey, Rte. 2, Box 407, Gladys, Va. 24554

Division of Ser. No. 242,314, Mar. 10, 1981, Pat. No. 4,491,043. This application Aug. 1, 1984, Ser. No. 616,122

Int. Cl.[4] B25B *13/00*

U.S. Cl. 81—58 **20 Claims**



1. A mechanism for securing and releasing a fixture having a detent, said mechanism comprising:

a disc;

elongated tube means having a fixture-receiving end;

elongated plunger means having a disc-receiving end and an actuator end, said plunger means slidably received in said tube means;

first slot means provided in said fixture-receiving end for permitting a portion of said disc to protrude out of said tube means, said first slot means including a first inclined cam surface;

second slot means provided in said disc-receiving end for receiving said disc and for communicating with said first slot means, said second slot means including a second inclined cam surface, said first and said second inclined cam surfaces defining an acute angle;

positioning means for normally placing said plunger means in a first position relative to said tube means so that said second slot means urges said disc into said first slot means with a portion of said disc protruding out of said tube means;

said plunger means movable against said positioning means to a second position relative to said tube means to allow said disc to move from said first slot means into said second slot means during attachment of said fixture to said fixture-receiving end of said tube means, said positioning means becoming active to return said plunger means to said first position so that said portion of said disc extends into the detent of the fixture upon completion of the attachment to the fixture, said first and second inclined cam surfaces cooperating to prevent said disc from disengaging from the detent when said disc extends into the detent of the fixture and an attempt is made to remove the fixture from said fixture-receiving end of said tube means; and

releasing means for placing said plunger means into a third position relative to said tube means to allow said disc to move from the detent of the fixture into said second slot to permit easy removal of the fixture.

4,553,454

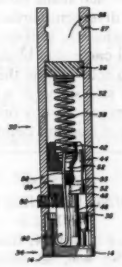
NUT RETAINING SOCKET WITH REPLACEABLE NUT RETAINER

Daniel A. Laskey, Saugus, Mass., assignor to Charles D. Lancaster, Saugus and Richard F. Laskey, Malden, both of, Mass.

Filed Nov. 28, 1983, Ser. No. 555,532

Int. Cl.[4] B25B *13/02*

U.S. Cl. 81—125 **4 Claims**



1. A nut retaining socket which comprises:

(a) a housing member having wall means defining a central bore, wherein one end of said housing member is a tool engaging socket and the other end is a nut engaging socket, said housing member having a support plate separating said tool engaging socket from said central bore and a removable detent protruding through said member into said central bore;

(b) a nut engaging insert positioned within said central bore, said insert having a nut bore engaging end of a first diameter slightly less than the diameter of a nut bore to be engaged, a radial slot in said nut bore engaging end and an opposite end of larger diameter than said nut bore engaging end, whereby a shoulder is formed at the junction of the larger diameter end of said insert with the smaller diameter nut engaging end of said insert;

(c) a spring member having one end secured within said insert and a second end extending into said radial slot, said second end of said spring member being movable across said slot and being biased radially outward for securing a nut within said nut engaging socket by pressing the nut against said wall means; and

(d) a compression spring, resiliently urging said insert away from said support plate towards said nut engaging socket, whereby said detent contacts said shoulder to confine said insert within said central bore of said member;

wherein withdrawal of said detent from said central bore permits removal of said insert.

4,553,455
NUT STARTER WITH SPECIAL BLADES

Melvin S. Wilcox, 347 Rosemore Dr., Davison, Mich. 48423, and Vernon L. Schwerin, 1148 Nottingham Dr., Lapeer, Mich. 48446

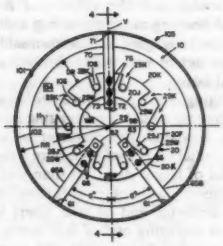
Filed Dec. 27, 1983, Ser. No. 565,551
Int. Cl.[4] B25B *23/08*
U.S. Cl. 81—443 6 Claims

1. A nut starter with special blades, said nut starter comprising a shank portion and a bit portion formed on one end thereof, said bit portion comprising two divergent blades secured on said shank portion, said blades having outer edges extending from the tip of the blades, said outer edges possessing at least one flat extending generally parallel to the axis of said bit portion, said outer edges further including for each flat an adjoining generally slightly less than perpendicular step, each flat being adapted to be releasably secured within the opening of a nut, each of said flats having an edge which makes an angle with the adjoining step not exceeding 85°, a sleeve movably mounted over said shank portion and said bit portion, said blades including divergent surfaces within the area covered by said sleeve whereby movement of said sleeve in a forward direction will cause said blades to converge to allow any one of said flats to enter within the opening of the nut and wherein movement of said sleeve in a rearward direction will permit said blades diverge whereby one of said flats contacts a portion of the surface of said nut defining said nut opening.

4,553,456
WRENCH-HOLDING FIXTURE FOR VEHICULAR WHEELS

Don L. Rafert, R.F.D. #1, Box 24, Gresham, Nebr. 68367

Continuation of Sér. No. 466,788, Mar. 25, 1983, abandoned.
This application Aug. 6, 1984, Ser. No. 637,734
Int. Cl.[4] B25B *29/00*
U.S. Cl. 81—462 15 Claims



1. For use in removable combination with a vertically upright vehicular wheel having an inwardly horizontally extending circular ridge spaced a finite ridge-radius from the wheel geometric-center, and said vehicular wheel being provided with a plural-number of horizontal apertures in a circular array spaced a constant bore-radius from said geometric-center and at equal angular intervals thereabout, a wrench-holding fixture comprising:

(A) a vertically upright annular jig-plate having a central reference-point horizontally alignable with said geometric-center and also having a larger outer-periphery surrounding a smaller annular-periphery and said reference-point, that part of the outer-periphery located above a horizontal plane passing through the jig-plate reference-point being spaced less than said ridge-radius from said reference-point, said jig-plate being provided with a plural-number of downwardly extending slots, said downwardly extending slots being wholly linearly extending along the length thereof and terminating as a lower-end of circular arc configuration, a plurality of said slots being as upper-slots extending wholly linearly downwardly from portions of the outer-periphery located above said horizontal plane, another plurality of said slots being as lower-slots extending wholly linearly downwardly from portions of the annular-periphery located below said horizontal plane, the majority of said downwardly extending slots being in lineraly extending radial relationship to the jig-plate central reference-point, and each downwardly extending slot circular arc lower-end being spaced substantially said bore-radius from the jig-plate reference-point and providing a horizontal wrench-resting shelf, thereby providing a plural number of circular arc wrench-resting shelves equal to the plural-number of lineal slots and spaced at equal angular intervals about said reference-point;

(B) sturdy riser means extending rigidly downwardly from the jig-plate and located wholly below the reference horizontal plane thereof, said riser means having a lower-base means located on both lateral sides of a vertical plane passing perpendicularly through the jig-plate reference-point and being adapted to rest downwardly against the circular wheel ridge, said lower-base means being spaced substantially said ridge-radius from the jig-plate reference-point whereby the riser means at downwardly resting condition has the tendency to horizontally align the circularly arrayed wrench-resting shelves with the circularly arrayed wheel apertures; and

(C) an upright topleg attached to the jig-plate and located above said horizontal plane and riser means, said topleg being laterally narrower than the riser means lower-base means and having a free-edge spaced substantially said ridge-radius from the jig-plate reference-point, said topleg free-edge providing the fixture upper terminus and being frictionally engageable with the wheel circular ridge whereby the topleg free-edge and the lower-base means together cooperatively maintain the jig-plate wrench-resting shelves horizontally aligned with the wheel apertures.

4,553,457
MACHINING A COOLED CYLINDRICAL OPTIC TO COMPENSATE FOR PRESSURE DISTORTION

Frederick G. Eitel, North Palm Beach, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 17, 1983, Ser. No. 505,166
Int. Cl.[4] B23B *1/00, 5/00*
U.S. Cl. 82—1 C 8 Claims

1. A system for finish contour machining the optical surface of a fluid flow cooled cylindrical optic and replicating the predetermined operational coolant fluid flow local pressure in said optical surface during said machining, wherein said cylindrical optic has a fluid flow passageway therein, with said passageway being located adjacent to and internal of said optical surface, said system comprising:

a rotatable spindle;

means operably connected to said spindle for selectively rotating said spindle;

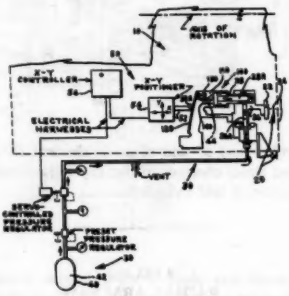
an adapter detachably connected to said spindle releasably holding said cylindrical optic;

a fluid flow connector removably interconnected between said adapter and said fluid flow passageway of said cylindrical optic;

a single point tool;

means operably connected to said single point tool positioning said tool relative to said optical surface;

means operably connected to said tool positioning means controlling the movement of said tool positioning means so as to control the movement of said tool, said controlling means also providing a signal representative of said predetermined operational local pressure in said optical surface of said cylindrical optic based upon the position of said tool relative to said optical surface of said cylindrical optic;



means providing pressurized fluid to said optical surface of said cylindrical optic; and

means regulating the pressure of said fluid in accordance with said signal from said controlling means, said pressurized fluid providing means delivering said fluid at a pressure substantially equal to said predetermined operational local pressure in said optical surface, whereby said predetermined operational local pressure in said optical surface of said cylindrical optic is substantially replicated.

4,553,458

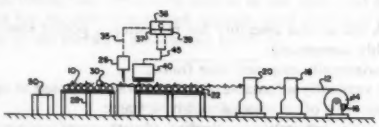
METHOD FOR MANUFACTURING HEAT TRANSFER ELEMENT SHEETS FOR A ROTARY REGENERATIVE HEAT EXCHANGER

John M. Schoonover, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Mar. 28, 1984, Ser. No. 594,155

Int. Cl.⁴ B23Q *15/12*; B26D *5/20*

U.S. Cl. 83—33 **1 Claim**



1. A method for forming and cutting heat transfer element sheets from a continuous sheet of material being passed beneath cutting shears positioned along the feed path of the material whereby the element sheets are cut in such a manner that nesting of adjacent element sheets when subsequently assembled within an element basket for a rotary regenerative heat exchanger is precluded, comprising:

a. drawing a sheet of heat transfer element material from a source thereof, the element material having a plurality of outwardly extending notches formed therein with the notches being spaced apart at equal intervals along the length of said sheet;

b. shearing a leading edge on a first subsheet along a first line disposed transversely across said notched sheet;

c. detecting the location of a first notch in said notched sheet upstream of the cutting shears and determining the distance therefrom to the first line along which the leading edge was sheared on said first subsheet;

d. advancing said notched sheet a desired length and shearing a trailing edge on said first subsheet along a second line parallel to and spaced from said first line whereby said first subsheet is sheared to fit into the element basket;

e. detecting the location of a second notch in said notched sheet upstream of the cutting shears and determining the distance therefrom to the second line along which the trailing edge was sheared on said first subsheet;

f. calculating the difference in distances between the location of the first notch in said notched sheet detected in step (c) and the location of the second notch in said notched sheet detected in step (e);

g. comparing the difference in distances calculated in step (f) to a preselected minimum tolerance indicative of the distance to be maintained between notches of adjacent element sheets in order to preclude nesting;

h. if the difference in distances calculated in step (f) is at least equal to said preselected minimum tolerance, proceeding directly to step (j);

i. if the difference in distances calculated in step (f) is less than said preselected minimum tolorence, advancing said notched sheet an amount about equal to said preselected minimum tolerance and shearing a leading edge along a third line disposed transversely across said notched sheet prior to proceeding to step (j); and

j. repeating steps (c) through (i) in succession until the element basket is fully stacked with alternate juxtaposed subsheets.

4,553,459

METHODS AND AN APPARATUS FOR TRILATERALLY OPENING AN ENVELOPE

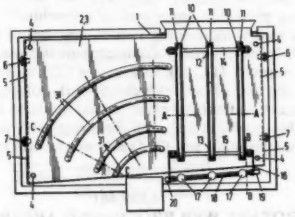
Jacobus F. Gombault, Drachten, Netherlands, assignor to Hadewe B.V., Drachten, Netherlands

Filed Nov. 2, 1983, Ser. No. 548,079

Claims priority, application Netherlands, Nov. 9, 1982, 8204336

Int. Cl.⁴ B43M *7/00*

U.S. Cl. 83—36 **13 Claims**



1. A method of cutting open more than one edge of an envelope, the method including conveying the envelope disposed in a first orientation along a supply path to contact an edge opening device for cutting open a first edge of the envelope, and subsequently transporting the envelope for cutting open at least a second edge thereof, wherein said step of subsequently transporting the envelope comprises:

returning the envelope to a location on the supply path upstream of said edge opening device after cutting open the first edge;

rotating the envelope in its own plane by 90 degrees to a second orientation wherein the second edge is located in a position corresponding to that of the first edge in the first orientation; and

conveying the envelope along the same supply path to contact the same edge opening device for cutting open the second edge.

4,553,460

WORK-HOLDING FIXTURE FOR METAL POWER SAWS

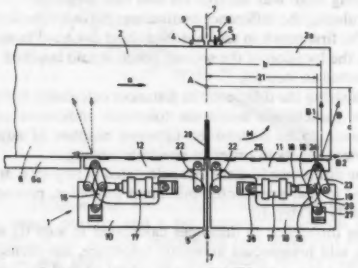
Werner Stahl, Auf der Hube 35, and Axel Barten, Siegener Strasse 227, both of 5910 Kreuztal 5, Fed. Rep. of Germany

Filed Oct. 11, 1983, Ser. No. 540,689

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1982, 3238809

Int. Cl.⁴ B26D *47/06*

U.S. Cl. 83—113 **8 Claims**



1. Work-holding fixture for a metal power saw (5) that cuts through a metal workpiece (2) along a cutting plane (7—7), comprising two gripping jaws (3,4) disposed on opposite sides of and closely adjacent the cutting plane, means (8,9) for selectively separately urging each of said gripping jaws toward the workpiece in a direction opposite the direction in which the saw cuts through the workpiece, and on the other side of the workpiece two work-holding supports (11,12) on opposite sides of said cutting plane and elongated in a direction perpendicular to the cutting plane, a toggle lever (15) for selectively individually swinging the end of each of said supports remote from the cutting plane toward the workpiece, a hydraulic clamping cylinder (17) for actuating said toggle lever (15), said cylinder extending perpendicular to said cutting plane (7—7), said toggle lever (15) comprising two arms (19, 20) that are pivotably interconnected at a joint (16) secured to a piston rod (18) of said clamping cylinder (17), one end of one said arm (20) being pivotably connected to a machine frame (10) that supports said work-holding fixture, one end of the other said arm (19) being pivotably connected to the associated work-holding support (11, 12), and means (22) movably interconnecting the end of said elongated work-holding support (11, 12) adjacent said cutting plane to said machine frame (10) at a point substantially in line with the direction in which the associated said gripping jaw (3, 4) acts on the workpiece.

4,553,461

ROTARY WEB PROCESSING APPARATUS

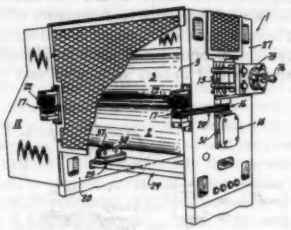
Larry P. Belongia, Oconto, Wis., assignor to Magna-Graphics Corporation, Oconto Falls, Wis.

Filed Oct. 12, 1982, Ser. No. 433,651

Int. Cl.⁴ B26D *1/56*

U.S. Cl. 83—344 **10 Claims**

1. A rotating web processing apparatus having a pair of opposed working cylinders, at least one of which includes a web working means, comprising a support, bearing means secured to said support and to the opposite ends of said cylinders for rotatably supporting said cylinder, at least one of said bearing means at each end of said cylinders being movable to vary the spacing between the cylinders, a separate gap adjustment means located between said bearing means at each end of the cylinders and having relatively moving elements including a rotating element for separately varying the spacing of said bearing means at each end of the cylinder, and separate actuator means for each of said gap adjustment means and each including a motion reduction means having a reduction on the order of 100 to 1, said motion reduction means mounted to said support in spaced relation to said gap adjustment means and having a rotating output member spaced from the rotating element, and a transmitting member connected to said rotating



output member and to said rotating element for establishing accurate and small changes in the gap adjustment means for precise location of said cylinders.

4,553,462

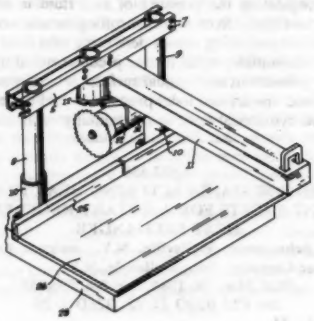
RADIAL ARM SAW

Howard Silken, 8676 Bridle Path Course, Davie, Fla. 33328

Filed Oct. 26, 1983, Ser. No. 545,617

Int. Cl.⁴ B27B *5/20*

U.S. Cl. 83—471.3 **16 Claims**



1. A radial arm assembly for mounting a power saw, said assembly comprising:

a horizontally disposed base frame;

two vertically adjustable mounting posts disposed at opposite sides of an edge of said base frame;

means for precisely coordinating adjustment of said vertical posts;

a cross-bar means horizontally mounted on said posts at opposite ends of said cross-bar means;

an arm means for supporting said saw, said arm means being rotatably attached to said cross-bar means about a vertical axis between said ends, said arm means being thereby adapted to rotate over said base frame about said vertical axis, said arm means comprising a guideway along substantially all of said arm; and,

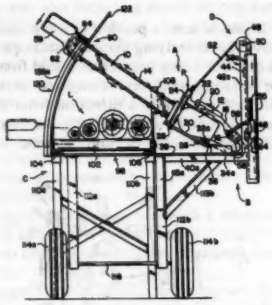
said saw being mountable on said arm means and adapted to translate along said guideway, a blade of said saw being moveable with said saw along said guideway, unobstructed by either of said posts, to and from a position substantially intersecting said vertical axis, whereby vertical and rotational adjustments of said saw are independent of one another and cuts substantially corresponding to the full length of said arm means may be effected.

4,553,463

PORTABLE WOOD CUTTING DEVICE

Richard C. Engel, 3208 Windsor Rd., Orrwell, Ohio 44076

Filed Jul. 8, 1983, Ser. No. 511,872
Int. Cl.⁴ B27B *17/08*
U.S. Cl. 83—796 **9 Claims**



1. A mounting assembly for a chain saw having a body portion comprised of a driving motor and a motor housing; a generally elongated blade projecting from said motor housing and having a cutting chain drivable about the periphery of the blade by the motor, said chain having a cutting run and defining a cutting plane with said blade, said motor having a throttle for accelerating said chain between an idling speed and a cutting speed; said mounting assembly comprising: a support frame including means thereon for mounting said motor housing for pivotal movement in said cutting plane of said saw about a horizontal axis adjacent to the motor housing between an elevated non-cutting position and a lowered cutting position; a handle means attached to said chain saw blade at the free end thereof for direct operator movement of the blade between said elevated non-cutting and lowered cutting positions; and throttle actuating means comprising a stiffly elastic strip member straddling and engageable with said throttle on downward movement of the saw blade and secured at the opposite ends of said member to said support frame so as to be elastically stretched by the throttle on downward movement of the saw blade from its elevated non-cutting position to its lowered cutting position, thereby effecting actuation of the throttle during the downward motion of the blade and maintaining the throttle in actuated position until the blade is returned to the elevated non-cutting position.

4,553,464

SIZE TRIMMER

Edward W. Turner, Deerfield; Peter J. Blake, Bondsville, and Joseph C. Strzegowski, Jr., Conway, all of Mass., assignors to Hardigg Industries, Inc., South Deerfield, Mass.

Continuation of Ser. No. 247,555, Mar. 25, 1981, abandoned. This application Dec. 19, 1983, Ser. No. 562,519
Int. Cl.⁴ B26D *3/00*
U.S. Cl. 83—865 **17 Claims**

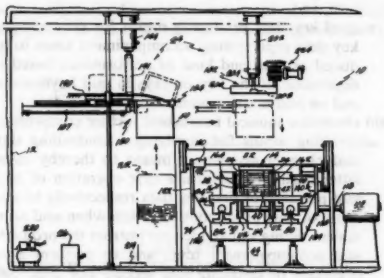
1. Apparatus for trimming walls of plastic containers comprising:

support means for supporting the container being trimmed, said support means including a support tongue having an outer shape comparable to the interior shape of the container;

first cutting means for moving in a direction parallel to at least one wall and slicing through the thickness of said at least one wall while moving in said direction parallel thereto;

second cutting means for moving in a direction parallel to at least one other wall normal to said at least one wall and slicing through the thickness of said at least one other wall while moving in said direction parallel thereto;

drive means for driving each of said first and second cutting means; and



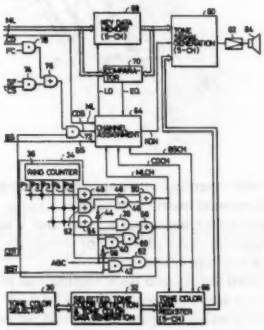
control means for controlling the cutting sequence of said first and second cutting means.

4,553,465

ELECTRONIC MUSICAL INSTRUMENT PRODUCING BASS AND CHORD TONES UTILIZING CHANNEL ASSIGNMENT

Susumu Kawashima, Hamamatsu, and Shigeru Yamada, Hamakita, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Apr. 3, 1984, Ser. No. 596,246
Claims priority, application Japan, Apr. 13, 1983, 58-065013
Int. Cl.⁴ G10H *1/38, 1/42*
U.S. Cl. 84—1.03 **2 Claims**



1. An electronic musical instrument, comprises:

keyboard means having keys representing respective notes and being capable of being depressed;

key data producing means for producing a plurality of key data respectively representing a plurality of tones to be sounded based on depression of the keys in said key-board means;

tone production means having a plurality of tone production channels each for producing a tone as designated by any one of said key data;

channel assignment means for respectively assigning a plurality of said key data supplied from said key data producing means to said plurality of tone production channels of said tone production means each to designate a tone to be produced therefrom; the improvement wherein

said key data producing means comprises:

first key data producing means for producing a plurality of first key data respectively representing a plurality of tones to be produced as a first kind of performance

based on the depression of the key or keys in said keyboard means;

accompaniment pattern generating means for generating accompaniment controlling data and accompaniment timing signals in a predetermined accompaniment pattern; and

second key data producing means for producing second key data representing accompaniment tones to be produced as a second kind of performance based on the depression of the key or keys in said keyboard means and on said accompaniment controlling data,

said electronic musical instrument further comprising:

controlling means for supplying a controlling signal to said channel assignment means to thereby cause this latter means to perform a first operation of assigning said plurality of first key data respectively to said plurality of tone production channels when said accompaniment timing signal does not instruct the production of said accompaniment tone, and to perform a second operation of assigning said second key data, one at a time, to one of said plurality of tone production channels when said accompaniment timing signal instructs the production of said accompaniment tone.

4,553,466

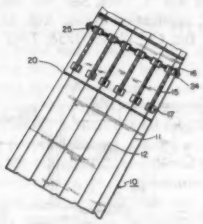
EASY FINGERS

John Palmieri, 335 Mercer St., Stirling, N.J. 07980

Filed Oct. 12, 1983, Ser. No. 516,255

Int. Cl.⁴ G10D *3/08*

U.S. Cl. 84—317 **20 Claims**



1. Selectively operated lever apparatus to enable the playing of a stringed musical instrument such as a guitar, a banjo, or the like, said instrument including a head and a neck section depending therefrom and a plurality of strings directed from said head to neck section, comprising:

a rod directed across said neck section and positioned above the strings and transverse thereto,

a pivotable housing coupled to said rod, an enlongated lever arm secured to said housing at one end and extending above and parallel to at least one of said strings at the other end,

a contact pad located on said lever arm at said other end,

spring bias means coupled between said lever arm and said rod to allow said housing and therefore said rod to remain out of contact with said string in a first position and to allow said housing to pivot upon application of pressure to said arm in a second position to cause said pad to contact said string whereby said spring means returns said arm to said first position when pressure is removed.

4,553,467

PAGE TURNING APPARATUS AND METHOD

Richard Goldner, 3717 Toad Lake Rd., Bellingham, Wash. 98226

Filed Oct. 24, 1983, Ser. No. 544,694

Int. Cl.⁴ G10G *7/00*

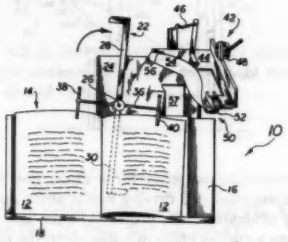
U.S. Cl. 84—487 **13 Claims**

1. An apparatus for turning the leaves of an open volume having a centerline about which leaves may be turned, comprising:

(a) a first elongated arm member, said first arm member mounted relative to said open volume for rotation in a plane generally parallel to the plane of said open volume, said path of rotation of said first arm member including a path portion which is a first distance over said open volume;

(b) means for lifting at least a portion of a top leaf a second distance above the underlying leaves of said open volume, said second distance being greater than said first distance;

(c) means for rotating said first elongated arm member through said path portion in a direction from the side of said volume centerline in which said top leaf is positioned toward the opposite side of said volume centerline,



whereby said first arm member while rotating through said path portion becomes interposed between said top leaf and the underlying leaves of said open volume to turn said top leaf about said volume centerline; and

(d) means for actuating said top leaf lifting means in synchronization with the rotation of said first arm member, such that at least a portion of said top leaf is lifted said second distance upon the arrival of said first arm member above that side of the volume centerline on which said top leaf is positioned to permit said first arm member to be interposed therebetween, further wherein said first arm member includes oppositely extending arm portions relative to the point of rotation of said first arm member, said arm portions alternatively turning the top leaf of said open volume.

4,553,468

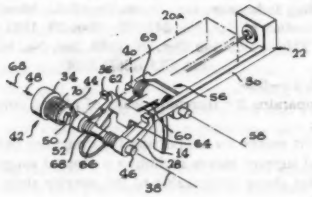
REPEATING FIREARM TRIGGER MECHANISM

Thomas P. Castellano, Los Angeles, Calif., and Nathan Mandel, 20283 Lorenzana Ave., Woodland Hills, Calif. 91364, assignors to Nathan Mandel, Woodland Hills, Calif.

Continuation-in-part of Ser. No. 434,564, Oct. 15, 1982, Pat. No. 4,421,009. This application Sep. 16, 1983, Ser. No. 532,710

Int. Cl.⁴ F41D *11/02*

U.S. Cl. 89—140 **8 Claims**



1. In a repeating firearm which includes a bolt and firing pin device that can independently slide forward and rearward within a gun frame that holds a barrel, and which also includes a trigger mechanism that can depress a primary sear to release

the firing pin device held by the primary sear, the improvement of an auto control for enabling full automatic operation comprising:

a secondary sear which can be depressed by said bolt as said bolt moves forward; and

mode control means including a manually moveable control member moveable between full auto and semiauto positions, and also including means responsive to the position of said control member, for urging depression of said primary sear at each forward movement of said bolt in the full auto position of said control member, and for refraining from urging depression of said primary sear at each forward movement of said bolt in the semiauto position of said control member, said mode control means coupling said secondary sear to said primary sear at least in the full auto position of said control member so the primary sear can then be depressed by depression of the secondary sear by said bolt;

said trigger mechanism includes a trigger which can be pulled and means connecting said trigger to said primary sear to depress said primary sear each time said trigger is pulled;

said trigger mechanism also including a stop which lies in the path of depression of said primary sear to prevent its depression when said trigger is not pulled, said stop lying out of the path of depression of said primary sear when said trigger is pulled, whereby even in the full auto position of the manually moveable member release of the trigger stops the firearm from firing.

4,553,469

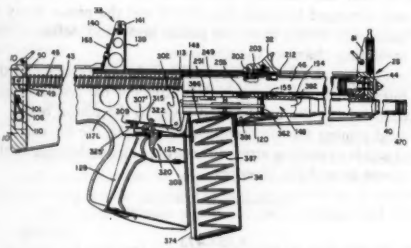
LOW-RECOIL FIREARM WITH NONCIRCULAR GUIDE ROD FOR ANGULARLY LOCATING BOLT CARRIER ASSEMBLY

Maxwell G. Atchisson, 6695 Ridgemoore Dr., Doraville, Ga. 30360

Continuation of Ser. No. 336,328, Dec. 31, 1981, abandoned. This application Aug. 8, 1984, Ser. No. 639,526

Int. Cl.⁴ F41D *5/10, 11/12*

U.S. Cl. 89—191.02 **26 Claims**



1. A gas operated firearm comprising:

means defining a buttplate at the rear of the firearm for resting against the shoulder of a shooter;

a barrel;

means defining a gas cylinder affixed to said barrel so as to receive the reaction force of firing, and in gas flow communication with the barrel;

guide rod means connected at a rear end to said buttplate so that longitudinal forces applied to the guide rod means are transferred to the buttplate;

said guide rod means extending from said buttplate and rigidly connected to said gas cylinder so that the reaction force received by the gas cylinder is imparted to the guide rod means;

means providing a gas piston supported on said guide rod means for reciprocal movement therealong so that the guide rod means extends through said gas piston, whereby the reaction force exerted on the gas cylinder is transferred from the gas cylinder to the buttplate by the guide rod means to reduce the recoil of the firearm; and

action spring means operative to urge said gas piston forwardly along said guide rod means, whereby said gas piston can compress the action spring means and travel rearwardly on said guide rod means toward said buttplate in response to gas from said barrel entering said gas cylinder.

4,553,470

ASSISTOR FOR REDUCING STEPPING FORCE

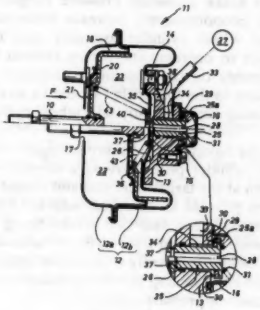
Toshiaki Shimazu, Hirakata, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

Continuation of Ser. No. 520,259, Aug. 4, 1983, abandoned. This application Mar. 27, 1985, Ser. No. 716,598

Claims priority, application Japan, Aug. 4, 1982, 57-136561

Int. Cl.⁴ F15B *15/10*

U.S. Cl. 91—6 **5 Claims**



1. An assistor comprising:

an assistor casing;

a push rod disposed in said casing and being freely movable in the axial direction thereof, said push rod having an outside end and an inside end, said outside end being connected to a clutch pedal;

a piston disposed within said casing and connected to the inside end of said push rod, said piston dividing said casing into first and second chambers, said first chamber freely communicating with the atmosphere;

a first rubber diaphragm securely attached around a peripheral edge of said piston, and having an outer peripheral edge securely fixed to said casing;

change-over valve means for switching said second chamber from communication with the atmosphere to communication with a negative pressure source and vice-versa, said change-over valve means including a poppet valve connecting said negative pressure source to said second chamber and a second rubber diaphragm operatively connected to said poppet valve for sealing said second chamber from communication with the atmosphere; and

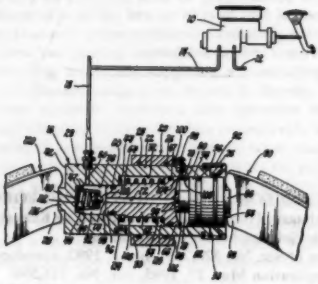
a negative-pressure setting spring and and thus said piston being operatively interlocked with said change-over valve means such that upon the movement of said push rod toward said change-over valve means, said negative pressure source is communicated with said second chamber and the atmosphere is sealed off therefrom.

4,553,471

WHEEL CYLINDER ASSEMBLY WITH PROPORTIONER

David L. Brademeyer, Centerville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 16, 1984, Ser. No. 590,477
Int. Cl.[4] F15B *11/20*; F01B *7/02*
U.S. Cl. 91—173 3 Claims



1. A wheel cylinder assembly adapted to act on an oppositely disposed pair of brake shoes, said wheel cylinder assembly having a brake actuating pressure proportioner therein actuatable to proportionately increase brake actuating pressures in said wheel cylinder assembly and thereby being adapted to act to decrease the forces exerted by the wheel cylinder assembly on the oppositely disposed pair of brake shoes in relation to the forces that would be so exerted should no proportioning action occur, said wheel cylinder assembly comprising:

a fixed cylinder having a bore therethrough,

a first wheel cylinder piston having a stepped recessed bore therein open at the larger bore end and closed at the smaller bore end to provide an abutment adapted for engagement with one brake shoe, said first piston being sealingly and slidably mounted in said fixed cylinder bore with both ends thereof extending outwardly of said fixed cylinder bore, said smaller bore end defining an inlet pressure chamber having a brake actuating pressure inlet;

a valve seat retainer secured within said smaller bore end and having a valve seat mounted therein for limited axial movement and a spring biasing said valve seat axially toward said larger bore end;

a second wheel cylinder piston reciprocably and sealingly received in said first piston larger bore end and extending outwardly thereof and having its outer end providing an abutment adapted for engagement with another brake shoe;

a proportioning piston having a smaller end and a larger end respectively reciprocably and sealingly received in said first piston smaller bore end and larger bore end, said proportioning piston having a bore formed axially therethrough and its smaller end defining a movable wall of said inlet pressure chamber and its larger end cooperating with said second piston to define axially spaced movable walls of a second pressure chamber in continuous fluid communication with said proportioning piston bore, the end of said proportioning piston bore adjacent said valve seat being engageable therewith upon sufficient movement of said proportioning piston axially toward said valve seat, and spring means continually urging said proportioning piston axially away from said valve seat;

and stop means in said first piston bore limiting axial movement of said proportioning piston in either axial direction;

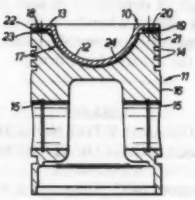
brake actuating pressure introduced through said inlet into said inlet pressure chamber initially flowing through said proportioning piston bore into said second pressure chamber and acting on said first and second wheel cylinder pistons, said first and second wheel cylinder pistons being adapted to move against respectively abutting brake shoes, the pressure in said second pressure chamber also acting on the larger effective area of said proportioning piston larger end and at a predetermined pressure moving said proportioning piston against the force of said spring means to engage said valve seat and momentarily close said proportioner piston bore and thereafter move relative to said valve seat to proportion pressure from said inlet pressure chamber to said second pressure chamber and generate proportional forces adapted to be applied on the brake shoes adapted to be actuated thereby.

4,553,472

PISTONS AND METHOD FOR THEIR MANUFACTURE

Robert Munro, Avenue House, 9 Sutherland Rd., Lymington, Hampshire SO4 9GP; David A. Parker, Orchard Cottage, Broadwell, Rugby, Warwickshire CV23 8HB, and Neil A. Graham, 162 Keresley Rd., Coventry, Warwickshire CV6 2JJ, all of England

Filed Aug. 22, 1983, Ser. No. 525,462
Claims priority, application United Kingdom, Aug. 20, 1982, 8224040
Int. Cl.[4] F04B *31/08*
U.S. Cl. 92—176 10 Claims



1. A piston for an internal combustion engine comprising:

a crown of an iron based material,

a piston body of aluminium or an aluminium alloy,

an annular intermediate member of an iron based material and arranged between the crown and the piston body to space the crown from the piston body and define a heat insulating chamber therebetween,

a layer of an aluminium alloy roll bonded to a surface of the intermediate member which is adjacent the piston body,

a weld joining the roll bonded layer to the piston body,

a weld joining the intermediate member to the crown,

said welds extending around the whole circumference of the piston to seal the chamber.

4,553,473

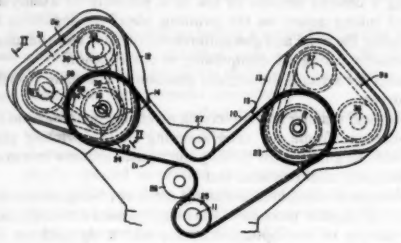
VALVE ACTUATING MECHANISM FOR ENGINES

Katsumi Ichida, Tokyo; Koichi Fukuo, Saitama; Junichi Araki, Saitama, and Isao Machida, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1983, Ser. No. 539,044
Claims priority, application Japan, Oct. 20, 1982, 57-183840
Int. Cl.[4] F01B *1/04*
U.S. Cl. 92—261 3 Claims

1. In a DOHC engine of the V-type, the combination of: a cylinder block having a crank shaft, two cylinder heads on said cylinder block to form a V-shape relationship, each cylinder head having two cam shafts and an intermediate shaft mounted thereon, a first wrap-around transmission connecting said crank shaft to both of said intermediate shafts, a second wrap-around transmission connecting one of said intermediate shafts to the two cam shafts on the same cylinder head with that intermediate shaft, and a third wrap-around transmission connecting the other of said intermediate shafts to the two cam shafts on the same cylinder head with said other intermediate

shaft, whereby either of the cylinder heads may be removed from said cylinder block upon disassembly of the first wrap-



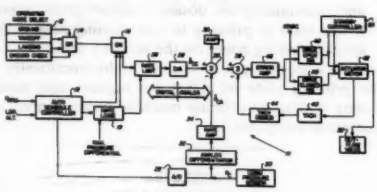
around transmission and without disturbing the said second or third wrap-around transmissions.

4,553,474

AIRCRAFT CABIN PRESSURIZATION SYSTEM

Paul P. Wong, Rancho Palos Verdes; John B. Lippold, Huntington Beach, and Glenn A. Burgess, Downey, all of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Nov. 25, 1981, Ser. No. 325,089
Int. Cl.⁴ B64D *13/04*
U.S. Cl. 98—1.5 **29 Claims**



26. A method for controlling air pressure in an aircraft cabin, comprising:

sensing air pressure in said aircraft cabin;

generating a signal indicative of the actual rate of change of air pressure in said aircraft cabin;

measuring ambient pressure on the exterior of the aircraft to provide an indication of the altitude of said aircraft;

calculating a commanded rate of change of air pressure in said aircraft cabin in response to aircraft altitude;

controlling the air pressure in said aircraft cabin in response to said cabin altitude signal and said commanded rate of change;

initiating a constant pressure situation in said aircraft cabin when aircraft altitude varies by less than a first predetermined values over a preset time period; and

maintaining air pressure in said aircraft cabin constant during said constant pressure situation by clamping said air pressure in said aircraft cabin to a constant value.

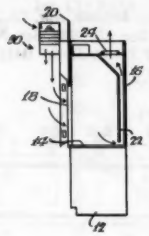
4,553,475

LABORATORY HOOD ATTACHMENT

G. Thomas Saunders, Geneva, Ill., assignor to St. Charles Manufacturing Co., St. Charles, Ill.

Filed Apr. 21, 1983, Ser. No. 487,162
Int. Cl.⁴ F24F *11/00*
U.S. Cl. 98—36 **9 Claims**

1. An attachment for a laboratory hood having an opening lead to a work area comprising an elongated housing having front, rear and top walls, and a lower open end with said rear wall attached to said hood above said opening, opening means extending across said front wall adjacent an upper edge thereof, support means in said housing between said opening means and said lower open end of said housing, a plurality of fans supported in spaced relation on said support means, baffle means between said support means and said lower open end for



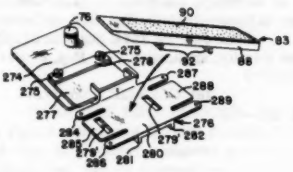
diverting flow toward said front and rear walls so that air can be drawn through said opening means by said fan means and exhausted through said lower open end and provide a fluid barrier across said opening.

4,553,476

INK PAD

Raymond L. Kirby, Jr., Vandalia, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 941,352, Sep. 11, 1978, Pat. No. 4,261,857, which is a continuation-in-part of Ser. No. 811,239, Jun. 29, 1977, abandoned, which is a division of Ser. No. 642,037, Dec. 18, 1975, Pat. No. 4,052,938, which is a continuation-in-part of Ser. No. 537,630, Dec. 30, 1974, Pat. No. 3,933,092. This application Sep. 10, 1979, Ser. No. 74,380
The portion of the term of this patent subsequent to Jan. 20, 1993, has been disclaimed.
Int. Cl.⁴ B41J *1/20*
U.S. Cl. 101—111 **2 Claims**



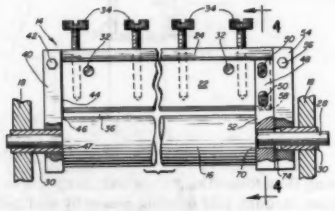
1. An improved ink pad comprising two and only two pieces adapted to be releasably attached to a carrier support having spaced holes, the ink pad including an elongated one-piece body of molded plastics construction having a relatively thin bottom wall and another piece comprising an ink-receptive pad supported by the bottom wall, a pair of longitudinally spaced and integrally molded fingers depending downwardly from the bottom wall, each finger having opposite sides and a holding projection at only one side, the holding projections being spaced from the bottom wall, the holding projections extending in opposite directions and being adapted to engage in corresponding holes within a carrier support, at least one of the fingers being flexible relative to the bottom wall to provide for releasably inserting the fingers and holding projections into the holes.

4,553,477

INK FOUNTAIN FOR DUPLICATING MACHINES

Stanley Witczak, Chicago, Ill., assignor to A.M. Internation, Inc., Chicago, Ill.

Continuation of Ser. No. 484,408, Apr. 13, 1983, abandoned.
This application Dec. 10, 1984, Ser. No. 680,009
Int. Cl.[4] B41F *31/04, 31/06;* B41L *27/08*
U.S. Cl. 101—365 2 Claims



1. An ink fountain assembly for use in duplicating machines, such as rotary offset lithographic machines, including a fountain trough defined by an elongated blade and an ink fou ,tain roller, the roller having flat end faces, comprising:

fixed wall means defining one end of the fountain trough for flush abutment against the adjacent end of the blade and the respective flat end face of the fountain roller to prevent ink leakage therebetween; and

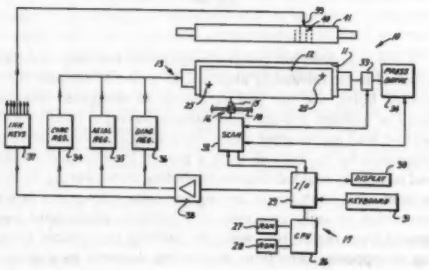
adjustable wall means defining and opposite end of the fountain trough, the adjustable wall means having flat surface means on the underside thereof for securing against the top surface of the blade to prevent ink leakage therebetween, and releasable fastening means for securing said adjustable wall means against the top surface of the blade whereby the wall means is adjustable relative to the blade and axially of the fountain roller to bring the adjustable wall means into flush abutment against the opposite flat end face of the ink fountain roller to prevent ink leakage therebetween.

4,553,478

PRINTING MACHINE PRE-SETTING ARRANGEMENT

Harry M. Greiner, Offenbach am Main; Hermann Fischer, Augsburg, and Claus Simeth, Offenbach am Main, all of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 20, 1984, Ser. No. 572,693
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1983, 3302798
Int. Cl.[4] B41F *5/06, 5/16*
U.S. Cl. 101—426 14 Claims



1. In a rotary printing machine having a printing plate mounted on a plate cylinder, a machine frame to which the plate cylinder is journaled, a drive for rotating the plate cylinder, automatic means for adjusting the axial and circumferential register of the plate cylinder, and automatic means for dosing a desired amount of ink to a plurality of axially-displaced inking zones on the printing plate, an apparatus for presetting the axial and circumferential register and the means for zonally dosing ink comprising, in combination,

means for sensing the angular position of the plate cylinder drive,

an optical scanner and traversing mechanism mounted to the machine frame for axial scanning of the printing plate including means for driving the optical scanner to a commanded axial position, and

a numerical computer including memory, being responsive to the angular position of the plate cylinder drive, the axial position of the optical scanner, and a signal from the optical scanner, and having means to selectively operate the machine drive, move the optical scanner to commanded axial positions, and generate control signals for said means for adjusting axial and circumferential register and said means for dosing ink, said numerical computer further comprising

(a) means for sensing the axial and circumferential positions with respect to the machine frame and machine drive, respectively, of at least one register mark engraved on the printing plate,

(b) means for adjusting the axial and circumferential positions of the register mark so that the register mark is aligned with predetermined axial and circumferential positions, and

(c) means for scanning printing areas on the printing plate and determining ink dosing control signals responsive to the ratio of printing to non-printing area in the respective inking zones on the printing plate,

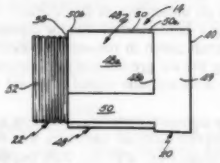
so that a single optical scanner multi-functionally scans the printing plate to preset the register and zonal ink dosing within the printing machine under control of the numerical computer.

4,553,479

PLASTIC BULLET

Marshall O. Willoughby, Orchard Lake, Mich., assignor to Tolcon Steel Corporation, Grand Rapids, Mich.

Filed Apr. 11, 1983, Ser. No. 483,916
Int. Cl.[4] F42B *5/02*
U.S. Cl. 102—430 7 Claims



1. A bullet projectile comprising:

a body portion having a blunt forward end and a rearward end, said body portion being frustoconically shaped and including a larger base comprising said forward end and a smaller base comprising said rearward end, whereby, during travel in a firearm barrel, said frustoconically shaped body creates air turbulence along the side of said body portion to coact with any rifling in the barrel, said body portion defining a plurality of pockets about the body circumference, said pockets being separated by ribs longitudinal to said body, each of said pockets terminating short of said forward end of said body, each of said ribs tapering from said forward end to said rearward end, each of said pockets including a floor comprising a segment of a right circular cylinder; and

means for securing said rearward end of said body portion to a bullet casing, said securing means being concentric with and diametrically smaller than said rearward end of said body portion.

6. An improved bullet including a projectile, having a stud, and a casing having a chamber wall defining a chamber for closely receiving said projectile stud to retain said projectile in said casing, the improvement comprising:

a plurality of annular, uniformly axially spaced ridges extending from said stud; and

said chamber wall having a plurality of annular, uniformly axially spaced serrations, the spacing of said serrations being different from the spacing of said ridges, whereby not all of said ridges and said serrations will matingly engage at one time regardless of the axial orientation of said stud within said chamber, whereby said projectile releases from said casing relatively smoothly.

4,553,480

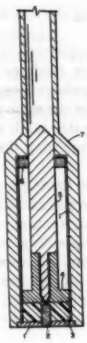
NO FLASH, VERY LOW NOISE HOWITZER ROUND AND TUBE

Norvel J. McLellan, 1002 N. Main St., Pleasanton, Tex. 78064

Continuation-in-part of Ser. No. 356,817, Apr. 29, 1982, abandoned. This application Aug. 3, 1983, Ser. No. 519,839

Int. Cl.[4] **F42B** *13/16*; **F41F** *1/00*

U.S. Cl. 102—430 **2 Claims**



1. A howitzer round and matching tube comprising a generally cylindrical case, a primer situated at the rear of said case, a propellant contained within said case adjacent the primer, a projectile, and a tube connected to the front of said case which forms a barrel of the same diameter as said projectile, wherein the improvement comprises:

said case containing a plunger, said plunger having a rear portion adjacent the propellant of essentially the same diameter as the interior of said case and a plug portion of a smaller diameter extending forwardly from said rear portion, said plunger having a longitudinal hole through the rear and plug portions;

said projectile being the diameter of said plug portion of the plunger and having a tail portion which fills said longitudinal hole in the plunger, said projectile extending into said tube when at rest, thereby forming an enclosed annular space between the projectile and the case;

said case also containing a washer adjacent the tube which is in air tight engagement with said case and said projectile.

4,553,481

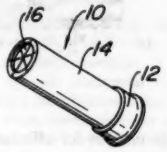
SHOT GUN SHELL TRACER WAD

Vero Ricci, 106 E. Stiles Ave., Collingswood, N.J. 08108

Filed Apr. 11, 1984, Ser. No. 599,093

Int. Cl.[4] **F42B** *7/02*

U.S. Cl. 102—458 **5 Claims**



1. In a shot shell having a primer, propellant and shot, a unitary molded plastic wad comprising:

a generally cylindrical shot compartment at the upper end of the wad with sidewalls having a first predetermined outer diameter for receiving and retaining the shot;

a generally cylindrical stem portion extending downwardly from the shot compartment along a common axis, the stem portion having sidewalls with an outer diameter less than the outer diameter of the shot compartment;

a generally conical portion having sidewalls and extending downwardly from the lower end of the stem portion along a common axis, the upper end of the conical portion having an outer diameter substantially equal to the outer diameter of the lower end of the stem portion and the lower end of the conical portion having an outer diameter substantially equal to the outer diameter of the shot compartment, the sidewalls of the conical portion being tapered from a first thickness at the upper end to a second thickness at the lower end;

a generally cylindrical portion extending downwardly from the lower end of the conical portion, the cylindrical portion having sidewalls and an outer diameter substantially equal to the outer diameter of the shot compartment;

an overpowder wad secured to the lower end of the cylindrical portion and engaging the propellant, the overpowder wad cooperating with the cylindrical portion, the conical portion and the stem portion to form a generally enclosed chamber whereby upon ignition of the shot shell primer the overpower wad moves upwardly into the chamber and the conical portion inverts to provide shock absorption for the shot compartment; and

tracer means within the chamber for forming a chemiluminescent tracer to accompany the shot.

4,553,482

PRACTICE PROJECTILE

Adolf Weber, Neunkerchen, and Carmen Porzelt, Nuremberg, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Continuation of Ser. No. 331,777, Dec. 17, 1981, abandoned. This application May 22, 1984, Ser. No. 611,928

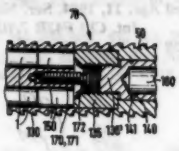
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1980, 3048206

Int. Cl.[4] **F42B** *13/20, 9/20*

U.S. Cl. 102—529 **7 Claims**

1. Practice projectile consisting of at least two axially extending and transversely divided projectile parts; a single shear bolt extending centrally within and along the longitudinal axis of said practice projectile and interconnecting said projectile parts; a time-delayed self-destruct arrangement in said projectile for dividing said projectile into at least said projectile parts, said self-destruct arrangement being actuatable upon said projectile traversing a predetermined flying distance; said self-destruct arrangement comprising at least two mutually independent, pyrotechnic time-delay self-destruct means having gas-pressure generating charges constituted of a two-based

propellant triggerable responsive to firing of the projectile, said bolt being shearable through the action of a gas pressure



generated by said charges for effectuating the separation of said projectile parts.

4,553,483

WORKTABLE, ESPECIALLY OFFICE TABLE

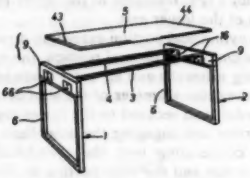
Arno Votteler, Stuttgart, Fed. Rep. of Germany; Max Lanuzzi, Weissalingen, Switzerland; Fredi Dubach, Adetswil, Switzerland, and Herbert Schreiner, Frauenfeld, Switzerland, assignors to Planmöbel Eggersmann GmbH & Co. KG, Espelkamp, Fed. Rep. of Germany

Filed Jul. 15, 1982, Ser. No. 398,347

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1981, 3128137

Int. Cl.⁴ A47F *5/12*

U.S. Cl. 108—4 **9 Claims**



1. A worktable, set on a surface, and comprising:

two side legs, each being provided with threaded holes;

support bars rigidly interconnecting said side legs respectively; each support bar having at least two fastening and support surfaces respectively which extend substantially parallel to the axis of said support bar;

fastening plates respectively connected to the ends of each support bar at right angles to the axis of said support bar, and in particular being eccentrically connected with the ends of said support bar in such a way that when the two fastening plates of a given support bar are rotated, said fastening and support surfaces of that support bar are located at different heights above said surface upon which said worktable is set; each fastening plate being provided with holes which are equally spaced from, and are rotationally symmetrical to, the middle point of said fastening plate, with the centers of said holes lying on an imaginary circle of symmetry, and with a given one of said holes being equidistant from its adjacent holes as viewed along said imaginary circle of symmetry; said holes of said side legs being arranged in such a way as to correspond with said holes of said fastening plates in order to effect said interconnection of said side legs by said support bars;

a table-top supported directly on said fastening and support surfaces of said support bars; and

fastening means provided on the underside of said table-top for holding the latter on said support bars.

4,553,484

CORNERBOARD FOR PALLETS

Clayton E. Cox, 1181 San Andreas Rd., Watsonville, Calif. 95076

Filed Sep. 30, 1982, Ser. No. 429,062

The portion of the term of this patent subsequent to May 5, 1998, has been disclaimed.

Int. Cl.⁴ B65D *19/14*

U.S. Cl. 108—55.1 **1 Claim**

1. A corner structure for a pallet comprising in combination:

(a) a top section, said top section having two side walls disposed at right angles to each other, forming an L-shaped structure;

(b) a top cap bridging the top walls of said L-shaped structure;

(c) a plurality of pins directed inwardly from each side wall of said top section, each of said pins terminating in a shoulder with an enlarged cap thereon;

(d) a bottom section of the same general configuration as said top section having side walls at right angles to each other and a bottom cap bridging the lower surfaces of said side walls;

(e) said lower section having a plurality of holes formed in each side wall corresponding in placement and separation to the pins in the top section each hole comprising a large top portion corresponding in diameter to a cap and a smaller lower portion corresponding in size to a shoulder whereby said top and bottom sections can be locked together to form a pallet corner, with said pins entering said slots and locking against the side walls of the bottom section,

(f) said top section and said bottom section have a plurality of pins and holes in the respective sections, spaced vertically from each other whereby said sections can be locked together at various preselected heights to change the distance between said top and bottom caps and

(g) said lower section having at least one hole missing at the top thereof whereby at least three pins must always be in locking position for the sections to lock together.

4,553,485

EXTENSION TABLE WITH SINGLE LEG

Chain-Hsiang Lee, No. 303, Tze-Li 1st Rd., Kaohsiung, Taiwan

Filed Nov. 8, 1982, Ser. No. 440,009

Int. Cl.⁴ A47B *1/08*

U.S. Cl. 108—86 **1 Claim**

1. An extension table with a single leg comprising

a leg;

a bottom plane mounted on said leg;

two top sections movably mounted on said bottom plane, each top section having an inclined guidance provided

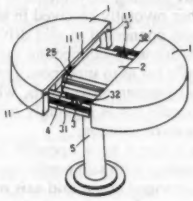
thereunder, each guidance having enlarged ends, and four holes on each side surface facing the center of the table,

two rods mounted apart but along a straight line on each side of said bottom plane;

two gears, one disposed between the ends of said two rods;

four rods two of which are mounted to one of said top sections and the other two of which are mounted to the other top section, said racks being engageable with said gears;

two detachable leaves provided on each side with a guide



rod for engaging said guidances of said top sections, each said detachable leaf being formed at two opposite sides with four pins insertable into the four holes on each said top section, said detachable leaves being connected together by hinges, each said detachable leave having a wing hinged to the outer side thereof; and

two supporting plates for steadying the movement of the leaves being fixed on the bottom of and extending from two sides of the detachable leave which forms the lower one when the two detachable leaves are folded on top of each other.

4,553,486

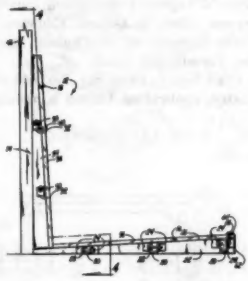
BEVERAGE DISPLAY SHELVING

Bradley G. Muhl, Keomah Village, Oskaloosa, Iowa 52577

Filed Dec. 27, 1982, Ser. No. 453,713

Int. Cl.[4] A47B *9/00*

U.S. Cl. 108—108 **7 Claims**



1. A freestanding beverage display shelving system comprising,

a display unit including a pair of horizontally spaced apart L-shaped support members, each support member including a horizontally disposed channel member adapted to be supported by the floor and integrally connected at its inner end to the lower end of a vertically disposed channel member,

a back member vertically disposed and positioned against said vertically disposed channel members and operatively supported on said horizontally disposed channel members,

a shelf member horizontally disposed and positioned on said horizontally disposed channel members;

said vertical channel members being tapered from bottom to top to position the back member at angle to the vertical and to maintain the back member by gravity against the vertical channel members;

said horizontal channel members being tapered front to rear to maintain the shelf member by gravity operatively against the vertical channel members and maintain beverage products toward the inner rear end of the shelf member;

said L-shaped support members being interconnected by spaced apart cross members to provide support for said shelf member and said back member;

said cross members on said horizontal channel members being supported along their bottom sides by the floor and the height of said cross members from the front to rear being sequentially shorter corresponding to the taper of said channels to provide a top shelf supporting surface in a common horizontal plane including the top surface of said horizontal channel members.

4,553,487

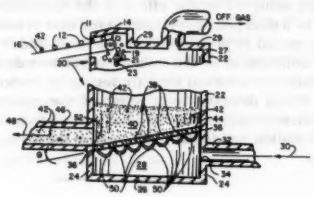
REMOVAL OF TRAMP MATERIAL FROM FLUID BED VESSELS

George P. Rasmussen, and Earl S. Grimmett, both of Idaho Falls, Id., assignors to Waste-Tech Services, Inc., Idaho Falls, Id.

Continuation-in-part of Ser. No. 528,815, Sep. 2, 1983, abandoned. This application Jun. 11, 1984, Ser. No. 619,678

Int. Cl.[4] F23G *5/00*

U.S. Cl. 110—245 **10 Claims**



1. A fluidized bed system comprising:

a vessel;

stationary flat sloped grid plate means comprising an array of fluidizing apertures disposed in and peripherally connected to the lower portion of the vessel;

a shallow fluid bed resting entirely on the plate means and comprising a variable depth transversely across the vessel, the bed being formed of inert granular material;

means by which fuel particles, containing non-combustible tramp objects, are delivered to the interior of the vessel and to the fluid bed therein;

a source of fluidizing air;

means by which influent fluidizing air is delivered to a site within the vessel below the plate means and the fluid bed;

means at a first elevation above the highest plate means elevation by which influent bed material is delivered to the vessel and the fluid bed within the vessel;

effluent means at a second elevation immediately above the lowest plate means elevation by which effluent bed material and tramp objects exit the fluid bed and the vessel after migrating downwardly along the plate means;

the stationary sloped grid plate means being angularly disposed between the fluid bed and the influent fluidizing air site within the vessel by which the entirety of the bed is uniformly fluidized without internal rotational circulation of the bed while retaining the surface of the bed essentially level, the tramp objects being walked downwardly along the top of the stationary sloped grid plate means to the effluent means solely by gravity and fluidizing air and bed material being prevented from passing through the sloped

plate means during both periods of fluidization and non-fluidization.

4,553,488

PROCEDURE AND FURNACE TO INCINERATE WASTE MATERIALS WITHOUT PRODUCING SMOKE

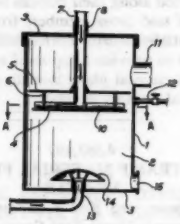
Carrara Giuseppe, Via Cavour, 125, Cernusco sul Naviglio, Italy

Filed Dec. 28, 1984, Ser. No. 687,266

Claims priority, application Italy, Jan. 12, 1984, 19138 A/84

Int. Cl.⁴ F23G *3/00, 5/00, 7/00*

U.S. Cl. 110—346 **5 Claims**



1. Procedure to incinerate waste materials without producing smoke, consisting in causing carbonization, distillation and combustion of a mass of waste material to be destroyed, characterized in that the carbonization and distillation of the material are achieved by the effect of the heat transferred to said mass by a steel plate pre-heated to red heat condition, said plate being caused to press down on the mass, and in that the complete combustion of the volatile substances derived from the distillation is achieved by introducing air under pressure; the heat which develops as a result of the combustion of said substances is utilized to maintain said plate heated in the red hot condition up to total exhaustion of the material to be incinerated.

4,553,489

SEWING DEVICE WITH A SEWING HEAD INCLUDING A ROTARY HOUSING

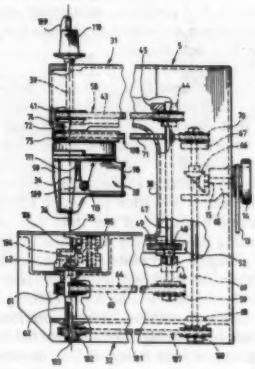
Günter Landwehr, Bielefeld, Fed. Rep. of Germany, assignor to Kochs Adler AG, Bielefeld, Fed. Rep. of Germany

Filed Oct. 1, 1984, Ser. No. 656,448

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1983, 8329089[U]; Mar. 27, 1984, 3411177

Int. Cl.⁴ D05B *21/00*

U.S. Cl. 112—121.12 **4 Claims**



1. A sewing device having:

a sewing head;

a feeding means for producing a two-axis-relative-movement between said sewing head and a workpiece to be sewn;

a drive means including a main drive shaft driving said sewing head and said feeding means;

said sewing head having:

a housing rotatably arranged at said sewing head about an axis of rotation, said housing having:

drive elements pivotally arranged, bearing means displaceably fastened to said housing,

gear means drivingly connected to said drive elements to impart jogging movements to said bearing means

a needle bar pivotally received in said bearing means

crank means connected to said drive elements, and

link means drivingly connecting said crank means with said needle bar as to superpose a reciprocating motion with said jogging movements, wherein said reciprocating needle bar is joggingly driven lateral relative to said axis of rotation;

a bearing including a hook operable by said drive means and cooperating with said needle bar, said bearing being rotatably arranged about said axis of rotation,

transmitting means for equiangularly rotating said housing and said bearing,

a control including a drive for rotating said housing and said bearing, and

a drive connection operably connecting said drive means with said drive elements, and

said drive connection comprising:

a double-timing-belt-pulley concentrically pivoted relative to said axis of rotation, said double timing-belt-pulley having an upper part and a lower part;

an upper timing belt drivingly connecting said upper part with a timing-belt-pulley connected to said main drive shaft; and

a lower timing belt drivingly connecting said lower part with another timing-belt-pulley comprised in said drive elements.

4,553,490

LOCKSTITCH SEWING MACHINE

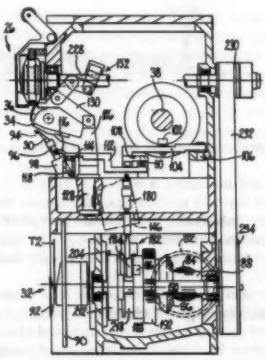
Geoffrey K. Collett, Glenfield; Christopher B. Martin-Jones, Birstall; Peter N. Tapner, Twickenham; David J. Commander, Milton Keynes; Mark S. Gilbey, Edgware, and Robert S. Berks, Milton Keynes, all of England, assignors to USM Corporation, Farmington, Conn.

Filed Sep. 7, 1984, Ser. No. 648,658

Claims priority, application United Kingdom, Sep. 8, 1983, 8324064

Int. Cl.⁴ D05B *15/02*

U.S. Cl. 112—38 **9 Claims**



1. A lockstitch sewing machine comprising stitch forming

instrumentalities, including a reciprocating hooked needle, on to the hook of which a loop of (needle) thread can be looped, when the needle has penetrated a workpiece and while it is projecting therethrough, and also a rotatable shuttle, by which the loop of thread is engaged, after retraction of the needle, and a lockstitch is formed using said loop and a further (bobbin) thread,

thread measuring means for supplying a measured quantity of needle thread for each stitch formation,

means, arranged "upstream" of the stitch forming instrumentalities, for clamping the thread after the measured quantity has been supplied as aforesaid,

and means, arranged between the thread clamping means and the stitch forming instrumentalities, and including a thread take-up arrangement, by which said measured quantity of thread is controlled during stitch formation and by which also a formed lockstitch can be drawn into the body of the workpiece, such drawing of the formed stitch taking place while the thread remains clamped by the thread clamping aeans, but after the start of the formation of the next following stitch, wherein, for the final stitch formed in a machine stitching cycle, stitch setting means is provided which is arranged "downstream" of the thread clamping means and which, in response to an "end of cycle" signal, is caused to pull on the thread to draw the formed stitch into the body of the workpiece, prior to the release of the thread by the thread clamping means, the latter thereafter being operated to release the thread.

4,553,491

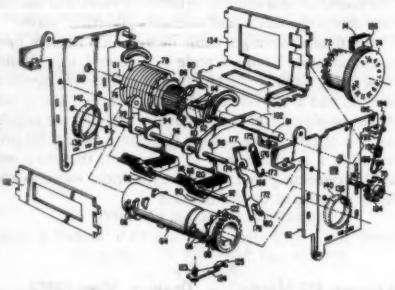
CONTROL MECHANISM IN A SEWING MACHINE FOR PATTERN AND BUTTONHOLE SEWING

Robert B. Brauch, Wayne, and John Mihovch, Keansburg, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Sep. 4, 1984, Ser. No. 646,890

Int. Cl.⁴ D05B *3/02, 3/04*

U.S. Cl. 112—465 **5 Claims**



1. In a sewing machine, a dial for selecting an operating mode, a gear rotatable by said dial, an idler gear rotatable by the dial rotatable gear, a cam selecting rotatable drum with fingers thereon, a gear on the cam selecting drum in engagement with the idler gear for rotationally positioning said drum in response to operation of the dial, a ratchet wheel on the drum, a fixed indexing detent spring for the ratchet wheel, a continuously rotatable drum with stitch controlling cams thereon, cam followers selectively positionable, in response to indexed movements of the cam selecting drum by the fingers thereon, against said cams for actuation thereby, and mechanism operably associated with the cam followers for controlling stitch forming instrumentalities on the machine, said cam selecting drum being loosely supported in the machine and being forcibly engaged by a spring biased member to establish a stabilized location for the drum in the indexed positions thereof, the idler gear also being loosely supported on the machine and being biased by a spring for a loose meshing relationship with the gear on the cam selecting drum resulting in play in said dial when in mode selecting positions.

4,553,492

NEEDLE GUIDE FOR SEWING MACHINES

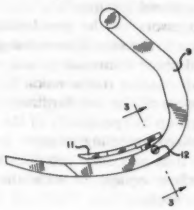
Erwin F. Jürgens, Hemmingen, Fed. Rep. of Germany, assignor to Union Special GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 11, 1984, Ser. No. 648,927

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1983, 3333310

Int. Cl.⁴ D05B *55/06*

U.S. Cl. 112—227 **1 Claim**



1. In combination with a sewing machine having a work supporting surface, a series of needles arranged to reciprocate in a generally vertical path, a spreader movable horizontally above the work supporting surface on one side of the needles vertical path and in timed relation with the needles reciprocatory movement, and a needle guide comprising:

operative means arranged above said work supporting surface and carried by said spreader means, said operative means having an extension arranged on the opposite side of the needles path whereby forming a recess through which the needles are guided while above the work supporting surface of the machine.

4,553,493

WARSHIP WITH STANDARDIZED OPERATING UNITS

Karl-Otto Sadler, Hamburg, and Willy Schmidt, Ellerbek, both of Fed. Rep. of Germany, assignors to Blohm & Voss AG, Hamburg, Fed. Rep. of Germany

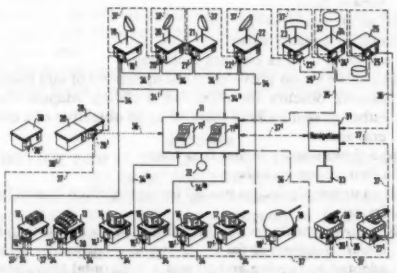
PCT No. PCT/EP82/00272, § 371 Date Jul. 29, 1983, § 102(e) Date Jul. 29, 1983, PCT Pub. No. WO83/02317, PCT Pub. Date Jul. 7, 1983

PCT Filed Dec. 21, 1982, Ser. No. 522,362

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1981, 3150894

Int. Cl.⁴ B63G *1/00, 9/00*

U.S. Cl. 114—1 **9 Claims**



1. A warship having a central command post unit, a navigation unit, a communication unit, and a plurality of standardized operating units including controlling units and controlled

units, each of which includes a container which is closed at the top by a standardized platform, wherein power supply lines and information lines connected to the central command post unit and/or to other standardized operating units terminate at each standardized operating unit, comprising:

a plurality of data processors, each having standardized hardware and software modules and being located inside a standardized operating unit such that the associated standardized operating unit is capable of operating independently of the other standardized operating units, each data processor including a memory for storing data specific to the associated standardized operating unit;

said controlling and controlled standardized operating units forming functional groups;

said data processors of the standardized operating units which belong to the same functional group only exchanging digitized crude information; and

standardize information transmission lines laid between the data processors of the standardized operating units of a functional group independently of the nature of the different standardized operating units;

whereby each data processor provides a standardized electronic interface equipped with the same connection contacts and sockets.

4,553,494

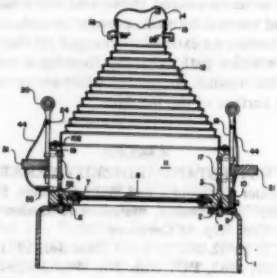
AQUATIC CAMERA

Spiridon Constantinescu, 30 Golders Green Ave., Scarborough, Ontario, Canada (M1C 3P6)

Filed Feb. 9, 1984, Ser. No. 578,747

Int. Cl.[4] B63B *35/00*

U.S. Cl. 114—66 **4 Claims**



1. An aquatic camera apparatus for looking into the water from a watercraft, said aquatic camera comprising:

(A) a looking mask being lightproof and including:

(a) a flexible strap for securing said looking mask upon the viewer face,

(b) an air intake valve, and

(c) an air exhaust valve;

(B) a folding camera obscura including:

(a) groove means provided at the upper end of said folding camera obscura for receiving a sliding adaptor fixed either to said looking mask or to an objective of a camera, and

(b) a downwardly facing first frame;

(C) a first casing including:

(a) an upwardly facing second frame matching to said first frame,

(b) a downwardly facing third frame being perimetrically inwardly trimmed for receiving an elastomeric gasket adapted to receive and to seal a horizontal transparent screen, said transparent screen being waterproof mounted and solidly secured against a downwardly movement relative to said third frame,

(c) a pair of vertical ribs for each short side of said first casing, which ribs are placed symmetrically outside of said first casing for reinforcing and supporting reasons,

(d) a bracket for each pair of said ribs, said bracket being fixed to said first casing by screw means and having, for manipulating and supporting reasons, a handle, a spindle and a lever articulated by a fix bolt,

(e) a horizontal threaded drainage hole located above said third frame and tangentially to said elastomeric gasket, and

(f) a flashlight attached to said first casing;

(D) a second casing having a cross section of similar shape and bigger area relative to said first casing and including:

(a) an upwardly facing fourth frame matching to said third frame,

(b) a vacuum wet chamber,

(c) a vertical threaded vacuum hole located outside of perimeter of said first casing;

(E) first connection means and sealing means for waterproof joining said first frame to said second frame;

(F) second connecting means and sealing means for waterproof joining said third frame to said fourth frame;

(G) two valves, one of them for drainage being located in said drainage hole, and the second for vacuum being located in said vacuum hole, and each of said two valves including:

(a) a cylindrical housing having an axial opening therethrough, an inner end, an outer end, a lateral drainage nipple, an internal seat at said inner end, and outside thread means at each end, said inner end being screwed to said aquatic camera into one of said locations,

(b) an internal cylindrical valve having third sealing means matching with said seat, said internal cylindrical valve having an axial opening inside communicating outside through a slot and a first slit,

(c) a threaded lid matching with said outer end, said lid having an axial hole and connecting means,

(d) a compressible spring located between said third sealing means of said internal cylindrical valve and said lid, and receiving inside said internal cylindrical valve,

(e) an activator having a cable incased in a flexible tube, and said cable having a node at each end, said flexible tube being fixed at one end to said connecting means of said lid and at the other end of said bracket, one of said nodes passing through said slot and said first slit and the second of said nodes passing through a second slit provided in a spur attached to said lever, therefore said cable connecting said internal cylindrical valve to said lever articulated to said bracket.

4,553,495

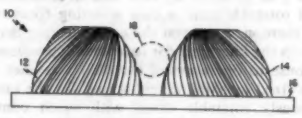
CLEAT

Michael Lerner, 152 Marshall St., Duxbury, Mass. 02332

Filed Sep. 13, 1983, Ser. No. 531,814

Int. Cl.[4] B63B *21/08*

U.S. Cl. 114—218 **9 Claims**



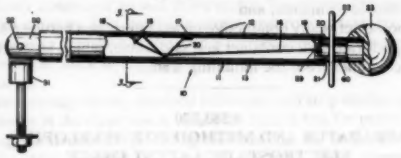
1. A cleat for securing a line, which cleat comprises a base plate; and a pair of first and second dome-shaped, non-rotating elements fixed to the base plate, the elements being characterized by high friction, line-engaging grooved surfaces which are spaced apart and adapted to receive and hold a line therebetween, whereby the line may be secured by drawing it towards the base plate and may be released by lifting it away from the base plate.

4,553,496

QUICK RELEASE TILLER EXTENSION

Robert Foresman, 26902 Paceo Cardero, San Juan Capistrano, Calif. 92675

Filed Jan. 6, 1984, Ser. No. 568,786
Int. Cl.[4] B63H *25/06*
U.S. Cl. 114—144 R 9 Claims



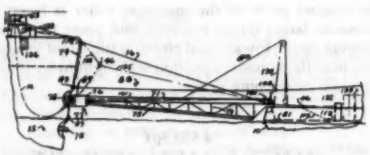
1. An extendable apparatus comprising,
an outer tube (11),
an inner tube (13) movably mounted within the outer tube, said inner and outer tubes being free to slide relative to each other,
said outer tube having a plurality of co-linear apertures (12) therethrough,
said outer tube has a first indicia (100) at at least one end thereof aligned with said co-linear apertures,
spring loaded button means (15) mounted within said inner tube and adapted to extend therefrom and to engage one of said apertures in said outer tube,
said inner tube has a second indicia (101) theron aligned with said button means whereby said first and second indicia can be aligned with each other in order to align said button means with said apertures,
linkage apparatus (16,18,20) connected to said spring loaded button means in order to selectively cause said button to be withdrawn from engagement with any of said apertures,
said linkage apparatus comprises elongated wire means (16),
retainer means (19) slidably mounted within said inner tube and connectcd to selectively operate said linkage apparatus,
said retainer means comprises a sleeve member (19) adapted to retain one end (20) of said linkage apparatus therein, and
gripping means (23) attached to an exposed end of said inner tube which extends beyond said outer tube.

4,553,497

TOW OF BARGES BY TUGS

Arthur J. Nelson, P.O. Box 3007, Daly City, Calif. 94015

Filed Nov. 15, 1982, Ser. No. 441,751
Int. Cl.[4] B63B *21/56*
U.S. Cl. 114—246 4 Claims



1. A mode of operating a fleet of tugs and barges as outfitted to facilitate changes in arrangement between a tug and barge to suit encounters throughout a voyage, comprising:
(a) outfitting the tug with: a powered controllable pitch propeller; auxiliary power for a bow thrustor, a capstan with auxiliary towline, and dual traction winches each having a towline; an 'A' frame, pivotally mounted to the tug after deck stern rail; a travelling crane means to lift and move heavy parts; a portable derrick with a winch operated wire likewise mounted and adjacent to the 'A' frame; and, a reel contained extendable wire with the free end having a coupling means;
(b) outfitting the barge with: a mechanism transmitting towline tension to the barge and establishing corrective rudder as monitored by said arrangement, a first series of light duty padeyes at the barge stem for a selected aft one end connection of a stub length wire, heavy duty padeyes establish a second series with each one located immediate to and beneath a said light duty padeye, a pair of equal length, socket ended, pin connecting bridle legs oppositely arranged as connected to said mechanism with the other end extending forward of the barge, a flounder plate being the vertex connecting means between the towline distal end pin connecting means and said bridles, and featuring a cufflink with anchoring chain; and,
(c) said arrangement and suitablity being:
Arrangement 1—a tug using one of its towlines for automatic control of a barge at sea;
Arrangement 2—a tug using its two towlines for double tow of arrangement 1;
Arrangement 3—a tug using two towlines for selective control of a barge in coastal inlets;
Arrangement 4—said above arrangements are adaptable by means to augment the rudder ability to turn a barge;
Arrangement 5—. An integrated tug and barge adapted only in sheltered waters as articulated to contend with conditioning forces and allow selective angular alignment between the tug and barge—a mooring requirement to exchange barges;
Arrangement 6—a triple tow of barges, an adaptation of arrangement 2, with redundancy by a second tug; and, said change to adapt the tow from arrangement 1 to arrangement 3 comprising:
(1) employing the flounder plate adapted with means to establish a span, from said vertex connection to said connection with the mechanism, selectively with equal measurement or slightly unequal measurement of oppositely arranged bridle legs while the alterable extension of a towline disposed the flounder plate from an aboard tug position to a selected distance aft of the tug;
(2) performing said change in arrangement by a sequence of acts comprising:
(a) Act 1—locating the flounder plate said aboard and employing a cufflink to provide an interim fix together of bridle leg socket ends for a deck anchor means with the cufflink to assume tension in bridle legs with the towline slack;
(b) Act 2—removing pins from the flounder plate releases attachments thereto;
(c) Act 3—employing a lifting means to remove and dispose the flounder plate to a conveniently located securing fixture with said deck;
(d) Act 4—accommodating cufflink means provide for the mating connection together of distal ends of towlines and bridle legs for alterably extended bridle legs as dual towlines;
(e) Act 5—powering traction winches to free said anchoring means and remove said interim fix of the cufflink therefrom; and,
(f) Act 6—paying out said dual towlines for a required sternward barge position establishes said arrangement (3).

4,553,498

DEVICE FOR CLAMPING AND TENSIONING AN ELASTIC DOCTOR BLADE

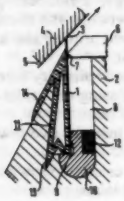
Herbert Sommer, Dusseldorf, and Gerhard Wohlfeil, Monheim, both of Fed. Rep. of Germany, assignors to Jagenberg AG, Dusseldorf, Fed. Rep. of Germany

Filed Apr. 10, 1984, Ser. No. 598,561
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1983, 3313972
Int. Cl.[4] B05C *11/04*
U.S. Cl. 118—126 16 Claims

1. In a device for unilaterally clamping an elastically deform-

able doctor blade into a cutting beam and for varying the force of the blade on a web of material that is to be coated and that runs over a mating roll, wherein the doctor blade rests against the web of material along a doctor line parallel to the cutting beam and is rigidly supported in its midsection along a line of support that is in fixed position with respect to the web of material parallel to the doctor line and the lower edge of the doctor blade can be displaced with respect to the plane of the doctor line and in the line of support, the improvement which comprises

(a) providing the cutting beam with a longitudinal recess in which the doctor blade is positioned,



(b) providing an elastic pressure-medium hose adjacent one side of the blade to push the doctor blade into the longitudinal recess and providing an elastic resistance in the recess in the cutting beam so as to clamp the blade between the resistance and the elastic pressure-medium hose, and

(c) providing means directly abutting the lower edge of the doctor blade for guiding the lower edge of the doctor blade toward the line of support and displacing the lower edge out of a plane defined by the doctor line and the line of support.

4,553,499

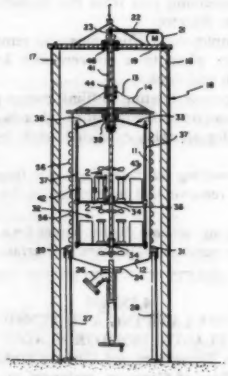
METHOD AND APPARATUS FOR THE PRODUCTION OF EXHAUST GAS FILTERS

John M. Crone, Jr., Fishkill; Erven J. Kuhlmann, and Matthew A. McMahon, both of Wappingers Falls, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 26, 1984, Ser. No. 604,187

Int. Cl.[4] B05C *3/04, 3/09*

U.S. Cl. 118—428 **7 Claims**



1. An apparatus for reacting aluminum with an alkali solution to form a coating composition which is deposited onto a filter substrate, and during which reaction residual electrons are released at the surface of the reacted aluminum, which apparatus includes:

a tank for holding a quantity of the alkali solution;

a mounting frame removably received in said tank to be immersed in the coating composition, and for holding the filter substrate;

a perforate wall container carried on said frame for holding discrete particles of the reactant aluminum,

said perforate wall container being electrically isolated from the tank and mounting frame respectively, whereby to avoid the formation of bubbles at the tank wall and the subsequent flaking of coating segments as a result of said bubble formation; and

a non-electrically conductive means interposed between said perforate wall container and said frame, which spaces the container from the mounting frame.

4,553,500

APPARATUS AND METHOD FOR DEVELOPING ELECTROSTATIC LATENT IMAGE

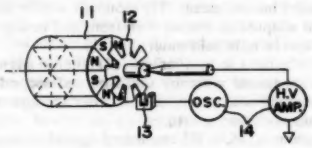
Masahiko Itaya; Satoshi Haneda, and Makoto Tomono, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 382,719, May 27, 1982, abandoned. This application Jul. 24, 1984, Ser. No. 633,673

Claims priority, application Japan, Jun. 8, 1981, 56-88569; Jun. 30, 1981, 56-102543

Int. Cl.[4] G03G *15/09*

U.S. Cl. 118—657 **3 Claims**



1. In an apparatus for developing an electrostatic latent image on an electrostatic latent image receptor using a one-component dielectric magnetic toner wherein said electrostatic latent image receptor and a developing sleeve retaining thereon said toner are arranged such that the toner does not contact with said latent image receptor when a developing electric field is not applied, and a magnetic roller formed thereon with magnet poles of different polarity alternately is arranged in said developing sleeve rotatably, the improvement characterized by comprising a bias application device having a rotary member rotatable in synchronism with said rotatable magnetic roller, synchronizing signal generation means for taking out a synchronizing signal from said rotary member, and bias means controlled by said synchronizing signal from said synchronizing signal generation means and forming an oscillating electric field between said developing means and said electrostatic latent image receptor, wherein said oscillating electric field is so formed that when the boundary portion of the magnet poles of the magnetic roller is faced to said electrostatic latent image receptor said toner flies from said developing sleeve toward said electrostatic latent image receptor and near the boundary portion said flight toner is attracted toward said developing sleeve.

4,553,501

SELECTIVE PLATING APPARATUS

Hiroshi Kobayashi; Shinichi Muramatsu, both of Nagano; Yoshiro Ichikawa, Suzaka, and Seizo Mitsui, Nagano, all of Japan, assignors to Shinko Electric Industries Co., Ltd., Nagano, Japan

Filed Mar. 14, 1984, Ser. No. 589,694

Int. Cl.[4] B05C *3/15, 3/18*

U.S. Cl. 118—669 **8 Claims**

1. A selective plating apparatus for selectively plating an elongated metal strip, stored on first and second reels, at intervals of a predetermined length in the lengthwise direction

thereof, while the strip is being fed in the lengthwise direction thereof, said selective plating apparatus comprising:

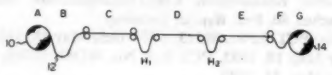
strip discharge means for delivering the strip from the first reel in a direction in which the strip is fed, said strip discharge means comprising:

a drive motor, coupled to the first reel, for driving the first reel;

detecting means, disposed adjacent to the strip and operatively connected to said drive motor, for controlling said drive motor, said detecting means controlling said drive motor so that slack in the strip is formed following the first reel, the slack in the strip being within a predetermined range;

a pre-treating station, disposed following said strip discharge means in the direction in which the strip is fed, for providing continuous strip feeding and treating the strip before the strip is plated, the slack in the strip being formed between the first reel and the pre-treating station;

intermittent feeding means, disposed following said pre-treating station in the direction in which the strip is fed, for converting the continuous strip feeding into an intermittent strip feeding and the intermittent strip feeding into the continuous strip feeding;



a plating station, disposed following said pre-treating station in the direction in which the strip is fed, for selectively plating the strip while the strip is stopped during the intermittent strip feeding;

an after-treating station, disposed following said plating station in the direction in which the strip is fed, for treating the strip after the strip is plated;

strip take-up means, disposed following said after-treating station in the direction in which the strip is fed, for winding up the strip on the second reel after the strip has been treated;

tension mechanisms, one of said tension mechanisms disposed between said pre-treating and plating stations and another of said tension mechanisms disposed between said plating and after-treating stations, said tension mechanisms imparting a predetermined tensile force to the strip by passing the strip via at least one fixed roller and at least one tension roller having a position; and

synchronizing means, operatively connected to said pre-treating and after-treating stations and said tension mechanisms, for synchronizing the continuous and intermittent strip feeding by detecting the position of the at least one tension roller.

4,553,502

TUBE-TYPE HEAT EXCHANGER

Jacques Dreuilhe, L'Isle Adam, and Paul-Victor Landet, Aulnay s/Bois, both of France, assignors to Framatome & Cie, Courbevoie; Charbonnages de France, Paris and Institut Francais du Petrole, Rueil Malmaison, all of, France

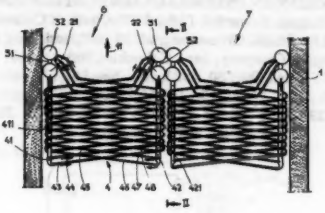
Filed Feb. 4, 1985, Ser. No. 697,678

Claims priority, application France, Feb. 3, 1984, 84 01666

Int. Cl.[4] F22B *1/02*

U.S. Cl. 122—4 D **8 Claims**

1. A tube-type heat exchanger placed in a fluid at elevated temperature and comprising two inlet headers, two outlet headers, a plurality of panels of tubes extending below said two inlet headers and said two outlet headers, to which headers the tubes are connected at upstream and downstream ends of the tubes and form two semi-panels which are imbricated one inside the other, each semi-panel comprising a sub-header tube which is connected to an inlet header and divided into at least one tube having a laced configuration so that the two sub-header tubes pertaining to the two semi-panels extend verti-



cally inside an envelope of said laced tubes and support said laced tubes by means of cantilever supports.

4,553,503

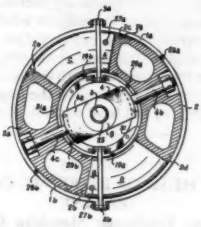
ROTARY PISTON MACHINE

Arnulfo Q. Cena, 1415 Hollywood Ave., Glenview, Ill. 60025

Filed Aug. 22, 1983, Ser. No. 525,126

Int. Cl.[4] F02B *53/00*

U.S. Cl. 123—18 A **2 Claims**



1. In a rotary internal combustion engine of the type having support means;

first and second shafts;

means mounting said first and second shafts on said support means for rotation about a first axis;

annular cylinder block means connected to said first shaft for rotation therewith about said first axis;

piston means arcuately reciprocable within, and rotable with, said annular cylinder block means, and connected to said second shaft for rotation therewith about said first axis;

off-axis journal means on said support means;

off-axis rotation means journaled on said off-axis journal means for rotation about a second axis parallel to said first axis;

and respective means interconnecting rotation of said first and second shafts about said first axis with rotation of said off-axis rotation means about said second axis;

the improvement wherein:

said support means comprises at least two wall means spaced along and substantially perpendicular to said axes with at least one of said shafts continuously extending past opposite sides of said support means;

said off-axis journal means comprises substantially circular boss means fixedly mounted on said wall means with the center of said circular boss means at said second axis;

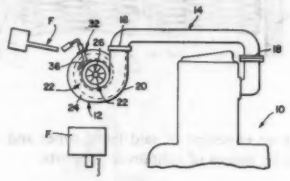
and said off-axis rotation means comprises means circularly interfitting with said boss means in a manner to be rotatably supported thereon.

4,553,504

MEANS AND METHOD FOR ALTERNATE FUEL FUMIGATION IN INTERNAL COMBUSTION ENGINES

Vinod K. Duggal; Edward J. Lyford-Pike, both of Columbus, and Edward D. Smith, Greensburg, all of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 30, 1983, Ser. No. 567,179
Int. Cl.[4] F02M *25/04*
U.S. Cl. 123—25 J **28 Claims**



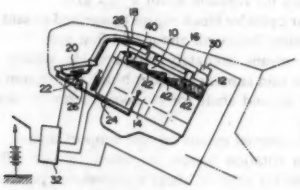
1. A method of partially replacing the primary fuel supplied to an internal combustion engine having an intake air means, a combustion chamber with the primary fuel being supplied to the combustion chamber through an injector which meters the amount of fuel injected into the combustion chamber in response to variation in pressure of fuel supplied to the injector, comprising the step of preventing addition of secondary fuel to the air intake means until engine load reaches 25% of full load, further including a step of gradually increasing the amount of secondary fuel supplied to the engine while correspondingly increasing an amount of the primary fuel supply that is diverted from the engine in a manner causing the proportion of secondary fuel to increase from zero percent to fifty percent of the total amount of fuel supplied to the engine as engine load increases from 25% of full load to 50% of full load.

4,553,505

CYLINDER HEAD OF INTERNAL COMBUSTION ENGINE

Yoshinori Hirano, Yokohama; Masahiko Kondo, and Takao Kubozuka, both of Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 25, 1984, Ser. No. 624,369
Claims priority, application Japan, Jul. 11, 1983, 58-124802
Int. Cl.[4] F01P *3/22*
U.S. Cl. 123—41.2 **9 Claims**



1. A boiling liquid cooling system for an internal combustion engine including a cylinder head having therein at least one combustion chamber, comprising:

first means defining about said combustion chamber a coolant jacket into which a coolant is introduced in a liquid state and from which the coolant is discharged in a gaseous state;

second means for condensing and thus liquifying the gaseous coolant introduced thereto from said coolant jacket;

third means for feeding to the coolant jacket coolant liquified by said second means;

fourth means for maintaining the level of the liquid coolant in the coolant jacket at a first level higher than said combustion chamber; and

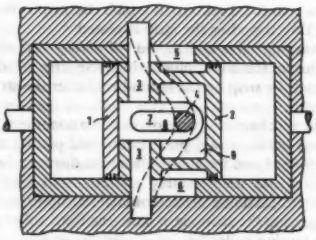
at least one imperforate baffle member disposed in and extending completely across said coolant jacket, said baffle having its lower end integrally connected with the upper wall of said combustion chamber, said baffle extending upwardly from said combustion chamber wall to a second level intermediate of said first level and said combustion chamber upper wall when said engine is in a generally level state, said baffle member acting as means for inhibiting movement of the liquid coolant within said coolant jacket during changes in attitude of the engine.

4,553,506

ENGINE WITH ROTATING CYLINDER WALL

Prodromos Bekiaroglou, Karl-Theodorestrasse 54/IV, 8000 München 40, Fed. Rep. of Germany

PCT No. PCT/EP82/00213, § 371 Date May 18, 1983, § 102(e) Date May 18, 1983, PCT Pub. No. WO83/01088, PCT Pub. Date Mar. 31, 1983
PCT Filed Sep. 23, 1982, Ser. No. 503,192
Claims priority, application Greece, Sep. 23, 1981, 66123; Fed. Rep. of Germany, Jun. 30, 1982, 3224482
Int. Cl.[4] F02B *75/28*
U.S. Cl. 123—45 R **5 Claims**



1. A machine comprising two pistons of equal masses, a single cylinder having openings on its surface, a stationary member surrounding said cylinder, means provided in said stationary member for introducing a fluid into two cylindrical working chambers defined by said pistons and opposite terminal walls of said cylinder, means provided in said stationary member for discharging a fluid from said working chambers, wherein said cylinder rotates upon movement of said pistons whereby to allow fluid to enter or leave said working chambers or to be retained therein depending upon the extent of rotation, and wherein said openings are in periodic registry with said means for introducing or discharging fluid whereby to allow fluid to enter or leave said working chambers depending upon the extent of rotation, wherein said stationary member has a single curved guide disposed about said cylinder, said cylinder having four linear guides in its wall, each being set apart 90°, two opposed linear guides being engaged by a portion of one piston, and two other opposed linear guides being engaged by a portion of the other, said piston portions being set 90° apart, whereby rotation of said cylinder about its longitudinal axis causes said pistons to rotate about and simultaneously perform symmetrical opposite linear movements along their longitudinal axis.

4,553,507

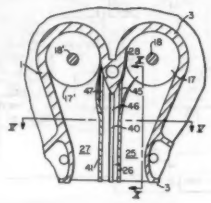
ENGINE WITH ADDITIONAL SHARED FLOW CONTROL RUNNER FOR TWO CYLINDERS

Donald J. Shaffer, P.O. Box 88, Upper Strasburg, Pa. 17265

Division of Ser. No. 205,649, Nov. 10, 1980, Pat. No. 4,381,738, which is a continuation-in-part of Ser. No. 24,049, Mar. 26, 1979, Pat. No. 4,232,639. This application Aug. 2, 1982, Ser. No. 404,298

Int. Cl.[4] F02B 75/18

U.S. Cl. 123—52 M 8 Claims



1. An internal combustion engine, including:

two expansible working chambers;

separate first and second intake valve means for respectively supplying working fluid to said two expansible chambers;

a source of working fluid; and

a manifold serially connected between said source of working fluid and said valve means to supply working fluid to said two expansible chambers, said manifold having a single plenum chamber for receiving the working fluid, a first runner fluid connected between said plenum chamber and said second intake valve means so as to substantially exclusively provide working fluid from said source to said first one of said valve means, a second runner fluid connected between said plenum chamber and said second intake valve means so as to substantially exclusively provide fluid from said source to said second intake valve means, and a third runner fluid connected between said plenum chamber and both of said intake valve means so as to commonly provide working fluid from said source to each of said intake valve means and so that said single plenum chamber is common to all three of said runners;

first flow control means for manually controlling the flow of fluid through said first and second valve means only and having a closed idle position and open position;

second flow control means independent of said first flow control means, having a first closed position restricting fluid flow through said third runner and a second open position permitting free fluid flow through said third runner; and

control means automatically responsive to an engine output condition correlated to speed of said engine to maintain said second flow control means in its first closed position at idle and speeds below a fixed low engine speed that is substantially above idle and maintain said second flow control means in its second open position at all engine speeds above a fixed high speed independently of the manual operation of said first flow control means.

4,553,508

INTERNAL COMBUSTION ENGINE

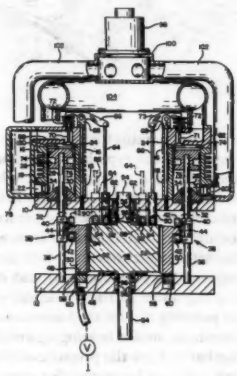
Donald E. Stinebaugh, 2320 N. Corbin Rd., Post Falls, Id. 83854

PCT No. PCT/US82/00507, § 371 Date Dec. 20, 1982, § 102(e) Date Dec. 20, 1982, PCT Pub. No. WO82/03889, PCT Pub. Date Nov. 11, 1982

Continuation-in-part of Ser. No. 257,967, Apr. 27, 1981, abandoned. This PCT application Apr. 22, 1982, Ser. No. 456,036

Int. Cl.[4] F02B 75/26

U.S. Cl. 123—58 AA 4 Claims



1. In a four-stroke internal combustion engine,

a plurality of cylinders each having a piston slidably received therewithin to define a combustion chamber and provided with means for selectively communicating a fuel-air mixture to said combustion chamber and communicating exhaust gases from said combustion chamber;

rotating cam means comprising a cylindrical outer drum provided with a circumferential cam surface mounted for coaxial rotation with a power delivery shaft by which power output of said engine is supplied;

an inner drum mounted on said power delivery shaft;

connecting rods extending from said pistons and provided with cam followers for engaging said cam means, wherein said pistons fire in predetermined order for rotating said cam means in response to pressure from said connecting rods;

an axially adjustable connection between said outer drum and said inner drum mounted on said power delivery shaft for varying a clearance between each said piston and a head of a corresponding one of said plurality of cylinders within which the piston is received, said axially adjustable connection comprising a splined connection between said outer drum and said inner drum; and

control means for varying an axial position of said outer drum in relation to said inner drum while said engine is operating, said splined connection being helical in configuration for changing the time intervals for communicating said fuel-air mixture and communicating said exhaust gases relative to the position of each piston within each cylinder as said cam means is moved axially of said power delivery shaft.

4,553,509
CHAIN DRIVE OF A RECIPROCATING-PISTON INTERNAL COMBUSTION ENGINE

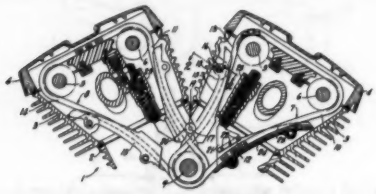
Hans Mezger, Freiberg, and Reinhard Konneker, Monsheim, both of Fed. Rep. of Germany, assignors to Harley-Davidson Motor Co., Inc., Milwaukee, Wis.

Filed Jul. 13, 1984, Ser. No. 630,698

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1983, 3326319

Int. Cl.⁴ F01L *1/04*

U.S. Cl. 123—90.27 **8 Claims**



1. A chain drive apparatus for a reciprocating-piston internal combustion engine of the type having cylinders arranged in a V-configuration above a crankcase and which has overhead camshafts driven by a pair of chains coupled to the crankshaft, said apparatus comprising a tensioning bar for each chain, each of said tensioning bars including two arms arranged generally at right angles with respect to each other, each of said tensioning bars being pivotably mounted to said engine by a single lateral bearing lug so as to form a lever, a first arm of said tensioning bar pressing against the loose strand of its respective chain, chain tensioner means bearing against the second arm of said tensioning bar to vary the pressure of the first arm against said chain, and a sliding bar means for each chain, secured to said engine, to guide the driving strand of its respective chain.

4,553,510
CYLINDER HEAD FOR INTERNAL COMBUSTION ENGINES

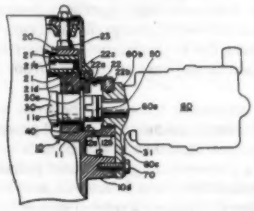
Yoshiki Yano, Saitama, and Yuji Kawaguchi, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1983, Ser. No. 545,905

Claims priority, application Japan, Oct. 27, 1982, 57-162731[U]

Int. Cl.⁴ F01M *1/06*

U.S. Cl. 123—90.34 **10 Claims**



1. A cylinder head for an internal combustion engine which incorporates an overhead camshaft and an auxiliary device designed to be attached onto the end of the camshaft through a coupling, comprising, a camshaft support assembly with an upper and lower portion and means to attach the same, a lubricant inlet portion and cylindrical recesses in said assembly to provide a camshaft support bearing and to form an enclosure around the coupling, and a groove formed in said enclosure portion of said assembly leading to another portion to allow the excess lubricant to return to its source.

4,553,511
STARTER CONTROL APPARATUS FOR AUTOMOTIVE VEHICLES

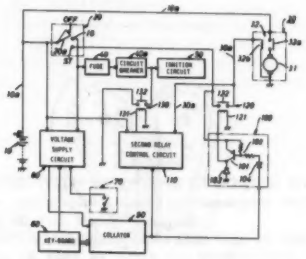
Shoichi Hayakawa, Nishikasugai, and Muneo Saito, Yokkaichi, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 28, 1983, Ser. No. 546,385

Claims priority, application Japan, Nov. 2, 1982, 57-192875

Int. Cl.⁴ B60R *25/04*

U.S. Cl. 123—179 B **6 Claims**



1. A starter control apparatus for a vehicle having a starter circuit activating a starter motor for a prime move of the vehicle when supplied with electric power from an electric power source, an ignition circuit cooperating with said starter circuit for effecting start of said prime mover when supplied with electric power from said power source, and an operator-actuable key switch arranged to selectively interrupt electric power to said starter and ignition circuits in a designated inoperative position thereof and to conduct said electric power to said starter and ignition circuits in a designed operative position thereof, the starter control apparatus comprising:

input means, operable by an operator prior to operation of said key switch, for producing an electric code signal entered by said operator;

collator means, having a specific code memorized therein and responsive to said electric code signal, for outputting while activated a concord signal when said electric code signal accords with said memorized specific code and for outputting while activated a discord signal when said electric code signal discords with said memorized specific code;

power supply circuit means, connected to said power source, said key switch and said input means, for activating said collator means in response to a signal from said input means and for maintaining said collator means activated while said key switch is maintained in its operative position;

first power supply control means, responsive to said collator means and said key switch, for conducting said electric power to said starter circuit when said key switch is in its operative condition and said collator means is outputting said concord signal, and for interrupting electric power to said starter circuit when said collator means is outputting said discord signal; and

second power supply control means, connected to said starter and ignition circuits and responsive to said collator means, for conducting electric power to said ignition circuit when said key switch is in its operative condition and said collator means is outputting said concord signal, and for interrupting electric power to said ignition circuit when said collator means is outputting said concord signal, and for interrupting electric power to said ignition circuit when said collator means is outputting said discord

signal while said starter circuit is directly connected to said power source for activation of said starter motor.

4,553,512

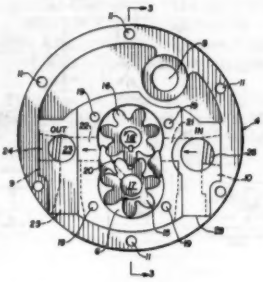
FLUID PUMP ASSEMBLY

Gerald Showman, 440 E. Georgia Ave., Connellsville, Pa. 15245

Filed Jan. 17, 1985, Ser. No. 691,979

Int. Cl.[4] F01M *1/00*

U.S. Cl. 123—196 S **17 Claims**



1. A fluid pump assembly comprising:

a starter motor having a drive shaft means protruding therefrom,

a pump housing secured to and operatively associated with said starter motor, said pump housing having a chamber which houses a fluid cavity and an annular flange and a generally circular rim on the base of said pump housing, the maximum transverse dimension of said annular flange generally being about 2 to 8 inches and the height from the base of said pump housing to the top of said upper chamber generally being about 1½ to 5 inches, said pump housing also having fluid inlet means and fluid outlet means,

gear means positioned within said fluid cavity having one gear wheel which is operatively associated with the drive shaft of said starter motor, another gear receiving an idler shaft and being in mesh with a driven gear whereby the drive shaft of said starter motor drives said gear means,

a fluid delivery system operatively associated with said pump assembly, for supplying fluid to said pump,

securing means for securing said pump housing to said starter motor,

receiver means which receives fluid exiting from said pump housing, and

an end cap which covers the fluid cavity in said pump housing.

4,553,513

THERMODYNAMIC ROTARY ENGINE

Perry E. Miles, and Mary A. P. Miles, both of 45 Kimberley Rd., Penylan, Cardiff, Wales

Continuation of Ser. No. 247,796, Mar. 26, 1981, abandoned. This application Sep. 28, 1983, Ser. No. 536,531

Claims priority, application United Kingdom, Mar. 28, 1980, 8010588

Int. Cl.[4] F02G *3/00*

U.S. Cl. 123—204 **14 Claims**

1. A rotary engine which operates on a single-pass, constant pressure, thermodynamic process, which rotary engine comprises a rotary positive-displacement compressor for supplying continuous compressed air, a combustion chamber which is for receiving the compressed air from the compressor and in which a fuel is burned at substantially constant pressure, a rotary gas expander through which the products of combustion from the combustion chamber are passed for the purpose of the generation of useful mechanical power, and mechanical connector means by which the expander drives the compressor, the expander comprising a rotor which is mounted for rotation in a cylinder which is itself rotatable about an axis displaced from that of the rotor so as to create between the cylinder and the rotor a chamber, the volume of which chamber varies with rotation of the cylinder and the rotor, and an inwardly projecting vane fixed to the cylinder and slidably engaging in a pivotable sealing means in the rotor so as to divide the chamber whilst permitting engagement between the rotor and the cylinder throughout 360° of rotation, and the expander having a fixed housing part containing inlet means

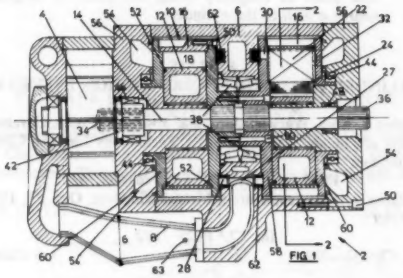


FIG. 1

for entry of the products of combustion to the chamber, which inlet means comprise a fixed first port in the housing part of the engine, which port is in communication with the combustion chamber, and a second port which rotates with and is located in one end face of the cylinder, and said expander also having outlet means for the products of combustion, which outlet means comprises an outlet port which communicates with the chamber and which is located in a circumferential face of the cylinder and rotates with the cylinder for the purpose of continuous passage of the exhaust gases to atmosphere.

4,553,514

INTERNAL COMBUSTION ENGINE

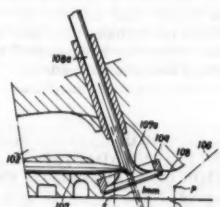
Yuzuru Namba; Kenichi Aoyagi, and Hiroshi Yokoyama, all of Hamamatsu, Japan, assignors to Suzuki Jidosha Kogyo Kabushiki Kaisha, Kamimura Takatsuka, Japan

Division of Ser. No. 289,700, Aug. 3, 1981, Pat. No. 4,450,803. This application Mar. 23, 1984, Ser. No. 581,091

Claims priority, application Japan, Aug. 13, 1980, 55-111351; Sep. 29, 1980, 55-135606; Sep. 29, 1980, 55-135607

Int. Cl.[4] F02B *31/00*; F02M *35/10*

U.S. Cl. 123—308 **3 Claims**



1. An internal combustion engine comprising:

a combustion chamber defined by a cylinder, a cylinder head and a piston fitted in said cylinder;

a main suction path having a suction port formed in said cylinder head and adapted to be opened and closed by a suction valve at an open end portion of said suction port, which is opened into said combustion chamber; and

a sub-suction path provided separately of said main suction

path and having an outlet end opened immediately upstream of said suction valve,

wherein the improvement resides in that the outlet end of said sub-suction path is positioned within a sphere with its center being a spark point of an ignition plug and with the same diameter as the internal diameter of said cylinder, and within a range of ±1 mm from a plane which contains both the center line of a stem of said suction valve and a point of tangency along a valve facing circle of a valve seat of the suction valve through which a tanget line containing the spark point passes, said point of tangency being the point of tangency nearer a wall of the cylinder.

4,553,515

CYLINDER HEAD FOR SPARK IGNITION INTERNAL COMBUSTION ENGINE

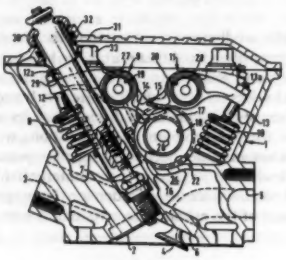
Charles S. King, Warwickshire, and Joseph J. Poole, Coventry, both of England, assignors to BL Technology Limited, United Kingdom

Filed Oct. 11, 1984, Ser. No. 659,787

Claims priority, application United Kingdom, Oct. 22, 1983, 8328319

Int. Cl.[4] F02F *1/32*

U.S. Cl. 123—308 **9 Claims**



1. A cylinder head for a multiple cylinder spark ignition internal combustion engine, comprising two inlet and two exhaust valves per cylinder operated by a single overhead camshaft, the inlet and exhaust valves being inclined relative to each other when viewed in a direction parallel to a camshaft axis and each sparking plug being positioned within its axis entirely within an area bounded by an angle defined by the axes of the inlet and exhaust valves when viewed in the same direction and with a spark gap lying between heads of the four valves, wherein the camshaft operates the valves via rockers on at least one rocker shaft and the axis of the camshaft is nearer to a face of the cylinder head than is an entire axis of each rocker, and wherein each rocker shaft is continuous along an entire length of the cylinder head.

4,553,516

IDLING RPM CONTROL METHOD FOR AN INTERNAL COMBUSTION ENGINE ADAPTED TO IMPROVE FUEL CONSUMPTION CHARACTERISTIC OF THE ENGINE

Shumpei Hasegawa, Niiza, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

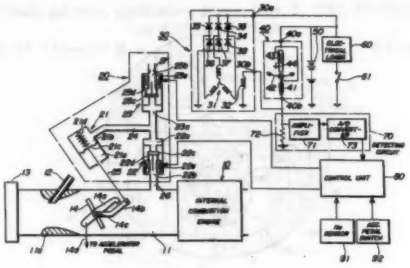
Filed Feb. 22, 1984, Ser. No. 582,318

Claims priority, application Japan, Feb. 28, 1983, 58-32538

Int. Cl.[4] F02D *9/02, 11/10*

U.S. Cl. 123—339 **13 Claims**

1. A method of controlling the rotational speed of an internal combustion engine during idling operation thereof, said engine having an output shaft, an actuator operable to vary output torque produced by said engine through said output shaft, an alternating-current generator driven by said engine through said output shaft for rotation therewith, said alternating-current generator being adapted to generate electric power in an amount corresponding to a value of field current flowing therein and the rotational speed of said engine, and regulator means adapted to vary the value of said field current of said alternating-current generator in response to electrical load applied on said alternating-current generator, the method comprising the steps of: (a) detecting a value of a parameter indicative of said field current of and applied electrical load on said alternating-current generator; (b) determining whether or not said engine is operating in an idling condition; and (c)



controlling the operation of said actuator in response to the detected value of said parameter to vary said output torque of said engine, to thereby control the rotational speed of said engine such that the value of said field current of said alternating-current generator becomes equal to a predetermined value approximately equal to the value required for the applied electrical load on said alternating-current generator, when it is determined that said engine is operating in said idling condition.

4,553,517

IGNITION SYSTEM WITH ADDITIONAL FUNCTIONS

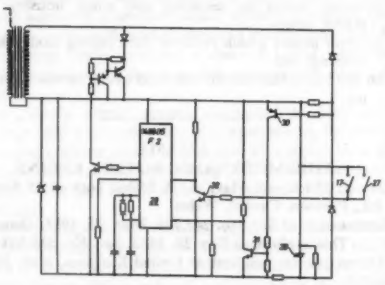
Bo C. Andreasson, Gothenburg, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Apr. 5, 1984, Ser. No. 596,943

Claims priority, application Sweden, Apr. 15, 1983, 8302113

Int. Cl.[4] F02P *5/14*

U.S. Cl. 123—417 **2 Claims**



1. In an ignition system for an internal combustion engine, wherein the ignition system includes an ignition generator with a winding for producing a voltage that varies cyclically with engine rotation, a microcomputer connected to control the speed of the engine by controlling the timing of the ignition thereof, the microcomputer including a first memory portion for storing first control characteristics for controlling the timing of the ignition as a function of a first input to the microcomputer, and means applying a signal to said first input in response to a determined amplitude of said voltage; the improvement comprising a start switch connected to apply a

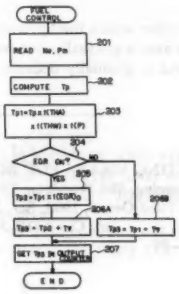
signal to a second input of said microcomputer, said microcomputer having a second memory portion for storing second control characteristics controlling the timing of the ignition as a function of the first input in the microcomputer, said second control characteristics permitting a lower maximum speed than said first control characteristics, in response to said second input, whereby the speed of said engine is limited upon starting.

4,553,518

AIR-FUEL RATIO CONTROL FOR AN EXHAUST GAS RECIRCULATION ENGINE

Mitsunori Takao, Kariya; Takahiko Kimura, Nagoya, and Norio Omori, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 10, 1984, Ser. No. 598,592
Claims priority, application Japan, Apr. 14, 1983, 58-66455
Int. Cl.⁴ F02M *51/00, 25/06*
U.S. Cl. 123—478 **14 Claims**



1. An apparatus for controlling an air-fuel ratio of an engine having an exhaust gas recirculation (EGR) arrangement, comprising;

(a) engine condition sensor means for detecting engine parameters including at least an air intake pressure;

(b) fuel injection means for supplying fuel to the engine;

(c) an exhaust gas recirculation system for recirculating a portion of an exhaust gas from an exhaust manifold of said engine to an intake manifold of said engine as a function of an operating condition of the engine;

(d) memory means for storing as map data fuel injection amount correction coefficients addressed by said parameters for use when the engine is operating in an EGR control mode; and

(e) control means for controlling said fuel injection means in response to said parameters and said correction coefficients, said control means comprising:

first means for computing a basic amount of fuel to be injected from said parameters,

second means for reading a desired correction coefficient from said memory means as a function of said parameters and for determining whether the latest correction coefficient thus read is different from a previous correction coefficient,

third means for correcting said basic amount with said latest correction coefficient if said latest and previous correction coefficients are the same,

fourth means for determining a modified correction coefficient related to said latest and previous correction coefficients if said latest and previous correction coefficients are different from each other and for correcting said basic amount with said modified correction coefficient so that simultaneous change in the air-fuel ratio of said engine with change in the correction coefficient from the previous one to the latest one is prevented, and

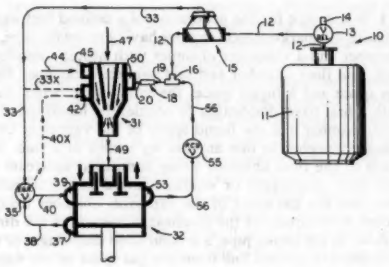
fifth means for controlling said fuel injection means so as to supply fuel based on the basic amount as corrected by either said third or fourth means.

4,553,519

PROPANE FEEDING DEVICE FOR INTERNAL COMBUSTION ENGINES

Laverne F. Masson, 246 Harcourt Dr., Saginaw, Mich. 48603

Continuation-in-part of Ser. No. 424,922, Sep. 27, 1982, abandoned. This application Sep. 13, 1984, Ser. No. 650,405
Int. Cl.⁴ F02B *43/00*
U.S. Cl. 123—527 **28 Claims**



1. In combination with an internal combustion engine having a gasoline-vaporizing carburetor, a fuel system for supplying gasoline to said carburetor and vacuum source increasing engine speed, the improvement comprising:

a propane supply reservoir;

a conduit leading from said supply reservoir to said carburetor;

a propane metering and throttling valve positioned in said conduit for providing and controlling the flow of propane through said conduit from said reservoir to said carburetor at the same time gasoline is supplied to said carburetor, said valve having vacuum responsive means associated therewith to actuate said valve and change the flow of propane therethrough in direct relationship with the change of said vacuum pressure, said vacuum responsive means being operably connected to said vacuum source means;

an aspirating aerating unit located in said conduit between said valve and said carburetor for aspirating air into said conduit and mixing the air with propane; and

said aspirating aerating unit comprising an inner tubular sleeve means having at least one aperture through its tubular wall and an outer tubular sleeve having a tubular sidewall and being slidably positioned over said inner sleeve means; said outer tubular sleeve having at least one aperture through its tubular sidewall; said inner sleeve means and outer sleeve being slidable relative to one another so that said apertures are alignable to allow air to be aspirated into inner tube and mixed with propane flowing therethrough;

whereby propane can simultaneously be injected into said carburetor in increasing amounts with increased engine speed.

4,553,520

DEVICE FOR THE GENERATION OF A DEFINED FUEL VAPOR/AIR MIXTURE

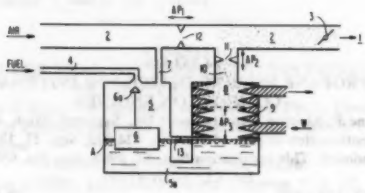
Klaus Lindenmaier, Stuttgart, and Josef Zieger, Esslingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 13, 1984, Ser. No. 650,006

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1983, 3332933

Int. Cl.[4] F02M *31/00*

U.S. Cl. 123—557 3 Claims



1. In a device for the generation of a defined fuel vapor/air mixture for spark-ignition engines having an intake pipe, a float chamber and a vaporizer chamber with heated vaporizer surface, said float chamber and said vaporizer chamber having a gas space and a liquid space, the intake pipe being provided with a first fixed diaphragm or nozzle, the liquid space of the float chamber and the liquid space of the vaporizer chamber being connected to one another by means of a line, the gas space of the float chamber being connected upstream of the first fixed diaphragm or nozzle, viewed in the direction of flow, and the gas space of the vaporizer chamber being connected downstream of the diaphragm, viewed in the direction of flow, to the intake pipe, a second fixed diaphragm or nozzle arranged in a second line from the gas space of the vaporizer chamber into the intake pipe, which diaphragm or nozzle induces a pressure drop of 85 to 99.99% of the first diaphragm, the vaporizer surface arranged above the vaporizer chamber liquid level for adjustment by means of the float chamber in such a way that, with increasing liquid level, wetted vaporizer surface increases, and wherein the improvement comprises

a damping line disposed between vaporizer chamber and float chamber at the height of the fuel level with the engine at rest, through which line the liquid fuel can transfer from the vaporizer chamber into the float chamber, and vice versa.

4,553,521

INTAKE SECONDARY AIR SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINES

Eiji Kishida; Yoshinobu Isobe, both of Tokyo; Fumio Hara, and Shumpei Hasegawa, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

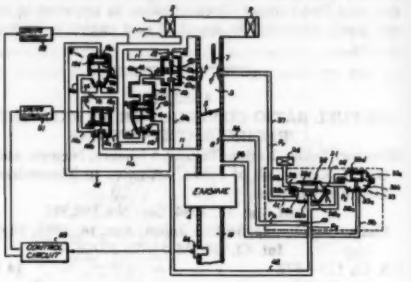
Filed Dec. 6, 1983, Ser. No. 558,605

Claims priority, application Japan, Dec. 10, 1982, 57-217548; Dec. 10, 1982, 57-217549

Int. Cl.[4] F02M *23/04*

U.S. Cl. 123—587 14 Claims

1. An intake secondary air supply system for an internal combustion engine having an exhaust system and an air intake passage with a throttle valve, comprising: two intake secondary air passages communicating with the engine air intake passage downstream of the throttle valve; an oxygen concentration sensor disposed in the exhaust system for generating an output signal; means for judging the air-fuel ratio on the basis of the output signal level of said oxygen concentration sensor to generate a rich signal when said air-fuel ratio is in a rich range; a control valve disposed in one of said intake secondary air passages and adapted to be opened in response to said rich signal; a flow rate control valve having a fluid chamber for causing the operation thereof; said flow rate control valve disposed in the other of said intake secondary air passages for varying the effective area of said other intake secondary air passage in accordance with the fluid pressure supplied to said fluid chamber; and integration means for supplying said flow



rate control valve with a fluid pressure which varies such that said effective area is gradually increased in the presence of said rich signal and is gradually decreased in the absence of said rich signal.

4,553,522

MOUNTING MEANS FOR BOW STABILIZERS

Donald G. Topping, 886 Woodbine Dr., Crestwood, Mo. 63126

Filed Oct. 3, 1983, Ser. No. 538,214

Int. Cl.[4] F41B *5/00*

U.S. Cl. 124—89 3 Claims

1. A device for mounting a pair of stabilizers on a bow for universal adjustment of their angular projection from opposite sides of a bow comprising:

a central, elongated section (12) having an intermediate portion arranged for the transverse, fixed attachment to a bow,

said central section (12) also being provided with a cylindrical portion (28) extending axially outward from each end,

a pair of elongated intermediate sections (14) each having a bore (30) extending axially inward from one end and each fittingly receiving therein one of said cylindrical portions (28) for rotation thereon about a first axis,

said pair of intermediate sections (14) each having a slot (32) extending axially inward from its other end thereby to bifurcate said other end and to provide two spaced portions (34) with adjacent flat surfaces,

said pair of intermediate sections (14) each being further provided with a slit (42) extending axially from the bottom of said slot (32) into said bore (30) thereby to provide resiliency,

a pair of elongated end sections (16) each having a flat sided portion (36) extending axially outward from one end and

fittingly inserted between said spaced portions (34) of one of said pair of intermediate sections (14), and

each of said pair of end sections (16) having a screw threaded bore extending axially inward from its other end for the screw threaded attachment thereto of one end of a stabilizer (60),

aligned aperatures (40), (41) and (43) extending through said spaced portions (34) and said flat sided portion (36) of each of said sections (14) and (16) are provided, and

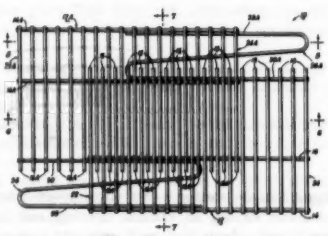
a single screw (38) extending through said aligned apertures in said portions (34) and (36) of each of said sections (14) and (16) provides a second, perpendicular axis of rotation for each end section (16) relative to each intermediate section (14) when loosened, and when tightened sufficiently screw (38) clamps a cylindrical portion (28) of central section (12) in a bore (30) of intermediate section (14) and clamps said flat sided portion (36) of end section (16) between spaced portions (34) of intermediate section (14) to provide a locked universal adjustment of each stabilizer.

4,553,523

TWO-WAY ADJUSTABLE GRATE AND METHOD FOR ADJUSTING THE LENGTH AND WIDTH

Charles E. Stohrer, Jr., Hickory Hills, Ill., assignor to Harper-Wyman Company, Hinsdale, Ill.

Filed Nov. 29, 1982, Ser. No. 445,202
Int. Cl.[4] F24C *1/16*; F24B *3/00*
U.S. Cl. 126—9 B **15 Claims**



7. A method for adjusting the length and width of a grate wherein said grate includes first and second identical grate members, each said first and second grate member includes upper and lower ends, each said first and second grate member includes first and second base members, a plurality of upper support elements secured to an upper surface of each of said first and second base members and a plurality of lower support elements secured to a lower surface of each of said first and second base members, said upper and lower support elements each include ends spaced from said first and second base members wherein said ends of said upper support elements are adjacent to and spaced from said ends of said lower support elements, said method for adjusting comprising the steps of:

aligning said second base member of said first grate member between said ends of said upper and lower support elements of said second grate member,

aligning said second base member of said second grate member between said ends of said upper and lower support elements of said first grate member, and

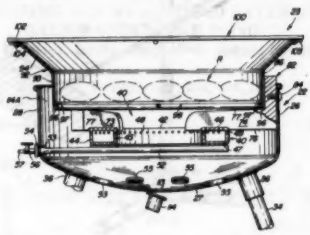
moving said first grate member toward said second grate member to position said first base members of said first and second grate members a predetermined distance apart.

4,553,524

PORTABLE COOKING AND BARBECUING DEVICE

Don R. Wheat, 114 Cottonwood Trail, Durango, Colo. 81301, and Don H. Coers, 1533 Heatherton Ct., Naperville, Ill. 60540

Filed Sep. 6, 1983, Ser. No. 529,498
Int. Cl.[4] A47J *37/00*
U.S. Cl. 126—25 R **7 Claims**



1. A portable cooking device comprising a bowl-shaped body having a bottom and an upstanding cylindrical side wall, means carried by said body for supporting the body in an upright position on a horizontal surface, an annular burner, means for supplying a combustible mixture of air and gas to said burner, at least one elongated support member connected to said burner and said side wall and supporting said burner in said body generally adjacent to the bottom thereof so that the flame of said burner is protected from the effects of wind during cooking, an annular adapter member having upper and lower ends, said lower end resting on said support member, the diameter of the lower end of said adapter member being greater than the diameter of said burner and less than the diameter of said cylindrical side wall so that an annular gap is defined between said cylindrical side wall and the lower end of said adapter member, and a food supporting grill resting on the upper end of said adapter member, whereby said adapter member is effective to direct heat from said burner upwardly through said food supporting grill to cook food resting thereon and the gap between the cylindrical side wall and the lower end of said adapter member permits air to flow downwardly through said gap when said burner is in operation in countercurrent relation to the upward flow from said burner to cool said cylindrical side wall and to supply additional air to said burner.

4,553,525

BARBEQUE GRILL ASSEMBLY

Charles G. Ruble, 2520 S. Fairview, Santa Ana, Calif. 92704

Filed Apr. 23, 1984, Ser. No. 603,182
Int. Cl.[4] F24B *3/00*
U.S. Cl. 126—30 **7 Claims**

1. A barbeque grill assembly providing infinitely variable positioning of a grill over a fire which comprises:

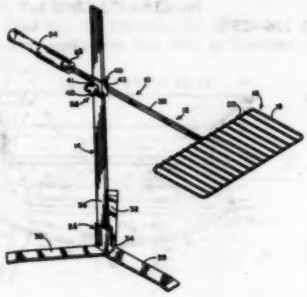
(a) a standard supported on a moveable base;

(b) a grill sub-assembly including a grill distally supported on an elongated bar with a handle on the opposite end thereof;

(c) a bracket slideably mounted on said standard with clamp means to adjustably secure said bracket to said standard independently of said grill subassembly and a first post carried by and projecting from the forward edge of one side of said bracket to provide a rest support for said bar and restraining means including a second post of shorter length than said first post and carried by and projecting from the rearward edge of said one side of said bracket and positioned above said first post to provide a cantilevered engagement of said grill sub-assembly when said elongated bar is mounted on said first post and beneath said second post;

(d) indexing means coextensive the length of said bar and

coacting indexing receptacle means on said bracket to restrain said grill sub-assembly against rotation about the longitudinal axis of said elongated bar, and operable at any position of said bar in said bracket; and



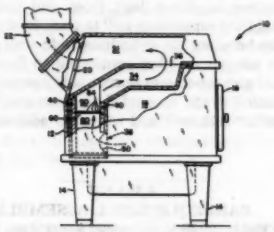
(e) restraining means comprising a first, upwardly facing lip distally carried on said first post and a second, downwardly facing lip distally carried on said second post, whereby said elongated bar is captured between said first and second posts and said grill sub-assembly is laterally restrained against rotation about the axis of said standard.

4,553,526

SECONDARY COMBUSTION SYSTEM FOR WOODBURNING STOVE

Peter E. W. von Conta, Montgomery Center, Vt., assignor to The Hearthstone Corporation, Morrisville, Vt.

Filed Feb. 27, 1984, Ser. No. 584,082
Int. Cl.[4] F24C *1/16*; F23B *5/00*
U.S. Cl. 126—58 **20 Claims**



1. An improved secondary combustion system for combusting the exhaust gases in a woodburning stove comprising:
- an insulated conduit defining an exhaust passageway and having an intake opening and an exit opening;
- dispersion means defining a plurality of apertures interposed across said passageway in the vicinity of the intake opening to disperse exhaust gases injected through the intake opening;
- a primary mixing chamber formed in the exhaust passageway for mixing the dispersed exhaust gases;
- restriction means defining a plurality of apertures interposed across said passageway and spaced from said dispersion means to increase the exhaust velocity and turbulence of the exhaust gases;
- turbulence means to increase the turbulence in the exhaust gases exiting the restriction means; and
- a secondary combustion chamber formed in the exhaust passageway between the restriction means and the exit opening for combusting the exhaust gases.

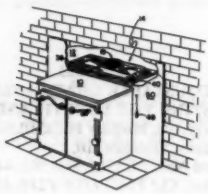
17. A method for removing pollutants from an exiting exhaust stream of unconsumed oxygen and exhaust gases produced by the combustion of combustibles in a woodburning stove comprising:
- (a) dispersing the exhaust stream into a plurality of small stream segments flowing in divergent directions;
- (b) recombining and intermixing the stream segments to form a more homogeneous mixture of the unconsumed oxygen and the exhaust gases;
- (c) restricting the exiting of the exhaust stream downstream of the intermixing thereby accelerating the gas stream;
- (d) imparting a turbulence to the accelerated gas stream thereby combusting the exhaust gases in the presence of the unconsumed oxygen.

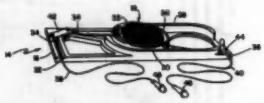
4,553,527

CATALYTIC UNIT FOR BURNERS

Peter S. Albertsen, Warwick, R.I., assignor to Nu-Tec Incorporated, East Greenwich, R.I.

Filed Feb. 16, 1984, Ser. No. 580,663
Int. Cl.[4] F23J *15/00*
U.S. Cl. 126—58 **3 Claims**





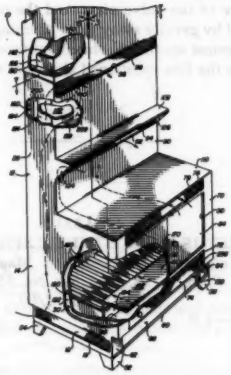
1. Apparatus supporting a catalytic converter for a combustion chamber having an exhaust opening and including an upper wall and a front wall, said apparatus comprising
- a support for mounting across a rear portion of said upper wall of said combustion chamber having said exhaust opening, said support including an opening for positioning over said exhaust opening for passage of exhaust gases therethrough, said support also including a pair of guide walls defining an operating region over said exhaust opening and a nonoperating region horizontally adjacent to said operating region along said rear portion of said burner, said support having a horizontal sliding axis that passes through said operating region and said nonoperating region and is parallel to said front,
- a catalytic converter mounted on said support for sliding movement between said operating and nonoperating reions along said sliding axis, and
- a pair of flexible tension members connected to opposite sides of said converter and extending from said support for causing said catalytic converter to be moved between said operating and nonoperating regions, said flexible tension members being connected such that pulling one said flexible tension member causes said converter to move along said sliding axis in one direction, and pulling the other said flexible tension member causes said converter to move along said sliding axis in the opposite direction.

4,553,528

FREE-STANDING STOVE AND FIREPLACE APPARATUS

William T. Wells, P.O. Box 7097, Tucson, Ariz. 85725

Filed Jan. 4, 1982, Ser. No. 336,886
Int. Cl.[4] F24B 7/00
U.S. Cl. 126—123 25 Claims



1. Free-standing fireplace apparatus for a room, comprising, in combination:

combustion chamber means in which combustion occurs to provide heat and including a front portion, a rear portion, and first and second side portions;

chimney flue means communicating with the combustion chamber and extending upwardly therefrom through which combustion gases flow from the combustion chamber and out of the structure in which the fireplace apparatus is disposed;

heated air chamber means through which air flows to be heated by the heat from the combustion chamber means, including

a first heated air chamber adjacent to the first side portion of the combustion chamber means and the chimney flue means,

a second heated air chamber adjacent to the second side portion of the combustion chamber means and the chimney flue means,

third heated air chamber means adjacent to the rear portion of the combustion chamber means and the chimney flue means and communicating with the first and second heated air chambers at a lower part of the third heated air chamber means, and

fourth heated air chamber means above the combustion chamber means communicating with the third heated air chamber means through the chimney flue means; and

combustion air means disposed rearwardly of and adjacent to the first and second heated air chambers and the third heated air chamber means and disposed about the chimney flue means for providing a flow of outside air to the combustion chamber for warming the air to the combustion chamber and for cooling the combustion gases flowing through the chimney flue means; and

opening means through which air flows into and out of the heated air chamber means, including

a first opening in the first heated air chamber through which room air flows into the first heated air chamber,

a second opening in the second heated air chamber through which room air flows into the second heated air chamber,

a third opening below the first side portion of the combustion chamber means and communicating with the third heated air chamber means through which room air flows into the third heated air chamber means,

a first outlet through which heated air flows from the fourth heated air chamber means, and

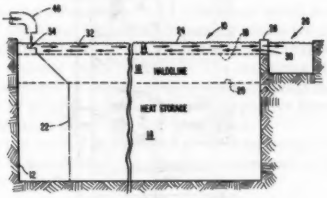
a second outlet above the first outlet through which heated air flows from the first and second heated air chambers.

4,553,529

METHOD OF AN APPARATUS FOR DYNAMICALLY STABILIZING THE WIND-MIXED LAYER OF A SALT-WATER SOLAR POND

Gad Assaf, Rehovot, Israel, assignor to Solmat Systems Ltd., Yavne, Israel

Filed Jul. 9, 1982, Ser. No. 396,759
Int. Cl.[4] F24J 3/02
U.S. Cl. 126—415 8 Claims



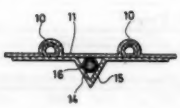
1. A method for dynamically stabilizing the convective wind-mixed layer of a salt-water solar pond, which covers a nonconvective halocline, the method comprising creating a two-layer flow regime in the wind-mixed layer due to differences in salinty, whereby lighter less dense water flows in one direction adjacent the surface of the pond, and heavier, more dense water, flows in a different direction beneath the lighter water, wherein the two-layer flow regime is created by selectively connecting the wind-mixed layer to a source of brine whose salinity exceeds the average salinity of water in the wind-mixed layer.

4,553,530

DEVICE FOR COLLECTING SOLAR HEAT

Akihiko Mizukami, and Tetsushi Shimaya, both of Shiga, Japan, assignors to Kyocera Corporation, Kyoto, Japan

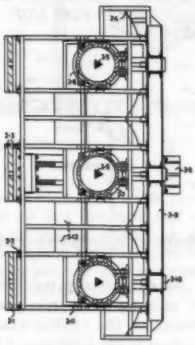
Filed May 15, 1984, Ser. No. 610,828
Claims priority, application Japan, May 17, 1983, 58-74397[U]
Int. Cl.[4] F24J 3/02
U.S. Cl. 126—422 8 Claims



1. A solar heat collecting device having a light-transmitting vacuum tube, a heat medium tube for passing a heat medium therethrough disposed in said vacuum tube, a protection tube inserted fixedly into said vacuum tube and a temperature sensor disposed in said protection tube so as to permit free inser-

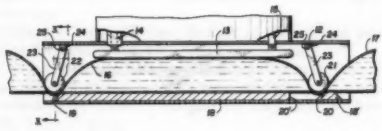
tion of the sensor into and drawing thereof out of said tube from outside and solar heat collecting device.

4,553,531
SOLAR RADIATION COLLECTOR
Francisco J. B. Rosende, Ibiza, 37 - 7°Izqda., Madrid 9, Spain
Filed Apr. 27, 1984, Ser. No. 604,603
Claims priority, application Spain, May 10, 1983, 522.290; Jan. 31, 1984, 529.345; Mar. 20, 1984, 530.792
Int. Cl.⁴ F24J *3/02*
U.S. Cl. 126—440 **4 Claims**



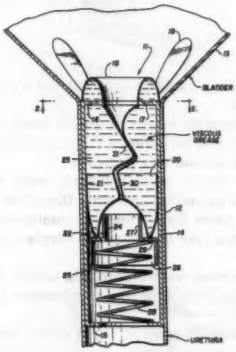
1. A solar radiation collector comprising an elongated receiver having a polygonal shape in cross-section through which a medium to be heated by solar radiation passes in a direction parallel to the length of said receiver, a concentrator for concentrating solar radiation onto said receiver, and an intermediate device positioned between said concentrator and said receiver for reducing energy losses due to radiation emitted by said receiver, said intermediate device having a uniform cross-sectional configuration along portions of length parallel to the length of said receiver and having at least one elongated window parallel to the length of said receiver for transmitting solar radiation focussed by said concentrator onto said receiver, said intermediate device having reflective arcuate surfaces for reflecting solar radiation emitted from said receiver back on said receiver and onto other arcuate surfaces of said intermediate device thereby to reduce the amount of radiation exiting through said window.

4,553,532
EXTERNALLY VALVED SHUNT FOR CARDIOPULMONARY BYPASS PUMP
Fred O. Bohls, Austin, Tex., assignor to Thomas M. Runge, Austin, Tex.
Filed Jul. 18, 1983, Ser. No. 514,601
Int. Cl.⁴ A61M *1/03*; A61F *1/24*
U.S. Cl. 128—1 D **7 Claims**



5. In a cardiopulmonary bypass pump adapted to operate with a valveless compressible tubing shunt, a pump compression passage means through which the shunt extends and including a valve plate external to the shunt on one side of the shunt, a pump compression plate movable across the passage means toward and away from the valve plate and being disposed externally to the other side of the shunt to cyclically compress and release a sack portion of the shunt within the passage means in cooperation with the valve plate, and a pair of spaced movable valve elements external to the shunt within the passage means and being adapted to compressively engage the shunt across the shunt, one valve element being biased by gravity to engage and pinch the shunt closed against an abutment surface of the valve plate, and the other valve element being biased by gravity away from pinching engagement with the shunt against another abutment surface of the valve plate spaced from the first mentioned abutment surface.

4,553,533
INTRA-URETHRAL PROSTHETIC SPHINCTER VALVE
Stephen B. Leighton, 93 Jefferson Ave., Maplewood, N.J. 07040
Filed Nov. 8, 1983, Ser. No. 550,040
Int. Cl.⁴ A61F *1/00*
U.S. Cl. 128—1 R **12 Claims**



11. A prosthetic urethral sphincter valve for implantation within the urethra adjacent the bladder, and capable of control by the exertion by the patient of sustained intra-abdominal pressure for at least several seconds, said valve comprising

tubular casing means for said valve, said casing means being adapted to be placed in a patient's urethra with its top end portion located adjacent and exposed to the patient's bladder;

holding means on the top end portion of said casing for holding said casing in place within the patient's urethra;

valve means for maintaining said urethra in a normally closed condition;

damping means for transmitting sustained intra-abdominal pressure from the patient to the valve means, whereby sustained intra-abdominal pressure from the patient causes movement of said damping means from an initial at rest position to a threshold detection position;

biasing means for biasing and returning said damping means to said initial position;

threshold detection means for detecting when said damping means has reached said threshold position; and

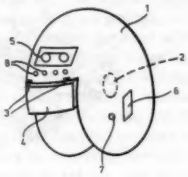
wherein the valve means opens to permit passage of urine therethrough upon actuation by said threshold detection means upon said damping means reaching said threshold position, said valve closing as said biasing means moves said damping means away from said threshold position.

4,553,534

APPARATUS FOR RELIEVING PSYCHOLOGICAL STRESS

Reinhard Stiegler, Breitenseerstrasse 108/7, A-1140 Wien, Austria

Filed Jun. 16, 1983, Ser. No. 505,059
Claims priority, application Austria, Jun. 16, 1982, 2332/82
Int. Cl.⁴ A61M *21/00*
U.S. Cl. 128—24.1 **6 Claims**



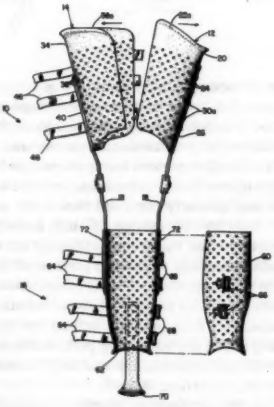
1. An apparatus for treating stress, the apparatus comprising:
a support in the form of a helment shaped to fit on the head and constructed to shield the ears from external noise;
a visible display carried on the support and pivotable into a position in which it completely blocks out external visual stimulus;
sound transducers in the support positioned to be juxtaposed with the wearer's ears; and
means including a tape player mounted in the support, said tape player having means for activating the transducers and display providing stress-reducing sounds and images.

4,553,535

THIGH BRACE

Alan Finnieston, 2380 W. 82nd St., Hialeah, Fla. 33016, and Joseph B. Zagorski, 355 Marquesa Dr., Coral Gables, Fla. 33156

Filed Sep. 7, 1983, Ser. No. 530,005
Int. Cl.⁴ A61F *3/00*
U.S. Cl. 128—88 **8 Claims**



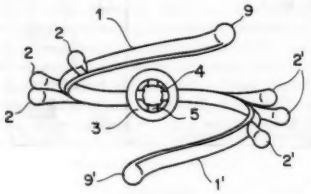
1. A thigh brace for maintaining broken bone segments in the proper healing orientation by protecting and reinforcing the surfaces of the upper leg between the hip and knee, said brace comprising:
an elongage, generally U-shaped interior member having a base and sidewalls extending around the laterally interior surface of the upper leg, said interior member being made of semi-rigid material with said sidewalls capable of being flexed;
an elongate, generally C-shaped exterior member having a base and sidewalls extending around the laterally exterior surface of the upper leg, said exterior member being made of semi-rigid material with said sidewalls capable of being flexed, the longitudinal side edges of said exterior member being disposed in overlapping relationship with the longitudinal side edges of said interior member whereby said interior and exterior members encase the upper leg with the inner surfaces of said interior and exterior members in contact with the surface of the upper leg;
a keeper means for stabilizing said members in mating relation to one another;
a retaining means for retaining said members in the desired location on the upper leg,
said retaining means including a tibia brace which is secured about the lower leg and a connecting means for connecting said tibia brace to said thigh brace such that said tibia brace and said thigh brace move as a unit along the longitudinal length of the leg, said connecting means including a pair of pivoted struts attached to respective lateral sides of said thigh brace and said tibia brace;
the pivot of each of said pivoted struts comprising a two-axis pivot to accomodate the changing center axis of the knee as the knee flexes.

4,553,536

INTRAUTERINE CONTRACEPTIVE DEVICE

Enrico Chiozza, Rome, Italy, assignor to Uniderm Farmaceutici s.n.c., Rome, Italy

Filed Feb. 24, 1983, Ser. No. 469,448
Int. Cl.⁴ A61F *5/46*
U.S. Cl. 128—130 **7 Claims**



1. An intrauterine contraceptive device comprising a rigid post having an insertion end and a sleeve pivotally connected at the insertion end, said sleeve being freely rotatable around the axis of the post, a pair of arms being integral with said sleeve, each arm being positioned opposite from the other and extending outwardly from the longitudinal axis of the sleeve, each arm having an essentially circular curve having the concave portion facing towards the post, the free end of said arms extending for a minor length beyond the post with respect to the rest of the arm such that the post is interposed between and extends beyond the pair of arms thereby preventing the arms from contacting each other the arms lying in a plane essentially parallel to and spaced from the axis of the post.

4,553,537

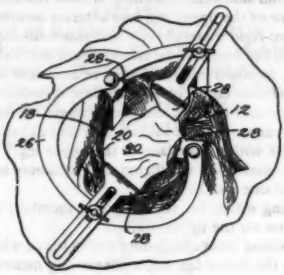
SURGICAL BARRIER

Max Rosenberg, 1721 Nashville Ave., New Orleans, La. 70115

Filed Jun. 9, 1983, Ser. No. 502,729
Int. Cl.⁴ A61F *13/00*
U.S. Cl. 128—132 R **15 Claims**

1. A woven structure for use in a surgical operation comprising an elongate, tubular knit fabric having opposite ends, means closing said ends so that said fabric will be flattened and malleable and conformable to internal body cavities, said structure including means for reducing absorption of liquids by the

fabric, said fabric having a selected width and length and said means for reducing absorption of liquids comprising a thin sheet of liquid impervious material disposed within said tubular fabric, said sheet having substantially the same width and length as said fabric, means securing said sheet in place within said fabric.



4,553,538

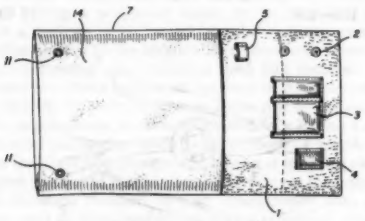
ENDOSCOPIC PILLOW COVERING WITH HIGH ABSORBENCY CHARACTERISTICS

Stephen Rafelson, 20 Stratford La., Mount Laurel, N.J. 08054

Filed Dec. 8, 1983, Ser. No. 559,422

Int. Cl.[4] A61B *19/06*

U.S. Cl. 128—132 D **21 Claims**



1. A covering for a pillow adapted to be located beneath a patient's head and mouth used in conjunction with medical instruments during endoscopy of the upper gastrointestinal tract, said covering comprising:

an absorbent extended edge of a pillow covering adapted to extend beyond the perimeter of a pillow and adapted for placement beneath a patient's mouth; and

means for anchoring medical instruments to said pillow covering during a medical procedure performed upon said patient.

4,553,539

BILATERAL FENESTRATED DRAPE

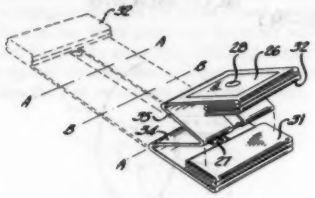
Henrietta K. Morris, Arlington, Tex., assignor to Surgikos, Inc., Arlington, Tex.

Filed Sep. 30, 1983, Ser. No. 538,060

Int. Cl.[4] A61F *13/00*

U.S. Cl. 128—132 D **3 Claims**

1. A bilateral, fenestrated, surgical drape comprising a rectangular main sheet having an upper surface and a lower surface, a top edge, a bottom edge and two opposing side edges, two fenestrations spaced apart from each other and spaced inwardly from the side edges of the drape and located along a line parallel to said top and bottom edges, a portion of the main sheet between said line and the top edge and a portion of the main sheet between said line and the bottom edge being fan folded in the longitudinal direction to form two longitudinally folded stacks of folds, the longitudinally folded stacks of folds overlying the upper surface of the drape, and the inner edge of the longitudinally folded stacks lying adjacent the fenestrations, the longitudinally folded stacks being fan folded from the side edges of the drape to form two transversely folded stacks of folds overlying a portion of the upper surface of the main sheet adjacent each of the fenestrations and separated by a central portion of the drape between the transversely folded stacks, the central portion of the drape being folded along fold lines toward a fold line passing through the center of said central portion to form two flaps, the flaps being folded over the lower surface of the drape to cover the fenestrations.



4,553,540

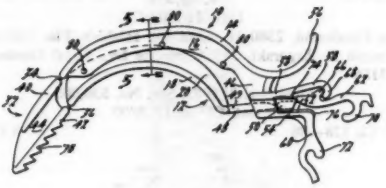
AIRWAY

Richard E. Straith, 17100 W. 12 Mile Rd., Southfield, Mich. 48076

Filed Aug. 16, 1983, Ser. No. 523,707

Int. Cl.[4] A61M *29/00, 16/00*

U.S. Cl. 128—200.26 **10 Claims**



1. A tongue retracting airway comprising

elongate upper and lower body members disposed in generally parallel relation closely adjacent to each other and having substantially coterminous inner and outer end portions, said body members being adapted to be manually inserted in superimposed orientation into the mouth of an individual and similarly removed therefrom, and adapted further to overlay the tongue of such individual in the inserted position and being longitudinally curved to conform at least generally to the top surface of the tongue;

extensions on the outer end portions of said body members of sufficient length to project from the mouth when said body members are fully inserted, at least one of said extensions having a laterally extending portion disposed to bear on the face of said individual in said fully inserted position to limit further insertion thereof;

an elongate clamping member disposed longitudinally beyond the inner end portions of said body members;

a pair of spaced hinge means spaced transversely with respect to the length of said airway, both of said hinge means being connected to said clamping member and each being connected to a respective one of said body members at the inner end of the latter whereby said clamping member extends into the throat of said individual in the fully inserted position of said airway;

means holding and guiding said body members for limited

longitudinal sliding movement of one body member relative to the other of said body members; and

manually operable actuator means cooperable with said body members in the fully inserted position of said airway for sliding said one body member longitudinally back-and-forth relative to the other of said body members,

said clamping member being connected to said body members by said hinge means such that sliding movement of said one body member in one direction with respect to the other acts through said hinge means to swing said clamping member to a nonaligned position with respect to said body members and toward the front of the throat and into pressed engagement with the latter at the base of the tongue to compress the latter forwardly, and

sliding movement of said one body member in the opposite direction with respect to the other acts through said hinge means to swing said clamping member to an aligned position with respect to said body members and toward the back of the throat to release said tongue and to permit ready removal of said airway.

4,553,541

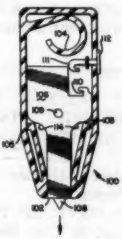
AUTOMATIC RETRACTABLE LANCET ASSEMBLY

James A. Burns, Elizabeth, N.J., assignor to Becton, Dickinson and Co., Paramus, N.J.

Division of Ser. No. 322,344, Nov. 18, 1981, abandoned, which is a continuation-in-part of Ser. No. 246,523, Mar. 23, 1981, Pat. No. 4,388,925. This application Jan. 20, 1984, Ser. No. 572,335

Int. Cl.[4] A61B *17/34*

U.S. Cl. 128—314 **4 Claims**



1. An automatic retractable lancet assembly comprising:

a housing having an aperture;

a slidable plunger inside said housing;

a lancet mounted on the distal end of said plunger with its point lying adjacent the interior side of said aperture;

a coiled flat spring inside one end of said housing adapted to contact the proximal end of said plunger and become compressed, said flat spring adapted to decompress upon release to cause the movement of said lancet outward of said aperture for penetration of the skin of a patient, said flat spring adapted to become dissociated from further movement of said lancet after said lancet completes its outward movement;

actuating means for retaining said flat spring in the compressed condition and for releasing same to cause the movement of said plunger;

a pair of leaf springs mounted inside the other end of said housing substantially parallel to the axis of movement of said plunger when said leaf springs are in the relaxed condition, said leaf springs adapted to be contacted by said plunger after said flat spring is released whereby said leaf springs are adapted to deflect outwardly to become momentarily biased and thereafter return to their original position and automatically retract said lancet back inside said housing after the flat spring has become dissociated from further movement of said lancet.

4,553,542

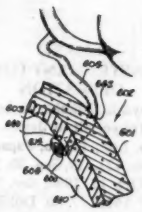
METHODS AND APPARATUS FOR JOINING ANATOMICAL STRUCTURES

Robert R. Schenck, 1100 N. Lake Shore Dr., (Apt. 33A), Chicago, Ill. 60611, and Harry P. Weinrib, 2644 W. Estes Ave., Chicago, Ill. 60645

Continuation-in-part of Ser. No. 548,867, Sep. 29, 1983, , which is a continuation-in-part of Ser. No. 349,885, Feb. 18, 1982, Pat. No. 4,474,181. This application Jun. 15, 1983, Ser. No. 504,683

Int. Cl.[4] A61B *17/11*

U.S. Cl. 128—334 R **13 Claims**



1. An encircling device formed of biocompatible material for joining a first tubular anatomical structure that is supported within the body by connective tissue and has a prepared open end, to a second anatomical structure, said device including a body which is substantially encircling an open interior region for receiving the end of the tubular anatomical structure, but which is not entirely encircling and has spaced ends closely adjacent with a gap therebetween, said gap being provided for accommodating the connective tissue supporting said first tubular anatomical structure, tethering means on the body at at least three spaced apart locations generally along a circle of substantially greater diameter than the diameter of the prepared open end for tethering the tubular anatomical structure thereto and for applying outward radial stress to the tubular anatomical structure, and means associated with the body for attaching said tethered tubular anatomical member to the second anatomical structure, said body being sufficiently rigid to act as the sole support for said anastomosed anatomical structures.

4,553,543

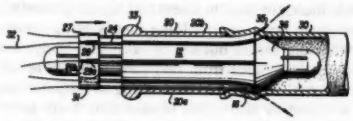
SUTURING ASSEMBLY AND METHOD

Disamodha C. Amarasinghe, 4068 Bridge Hampton La., Virginia Beach, Va. 23455

Filed Mar. 5, 1984, Ser. No. 586,473

Int. Cl.[4] A61B *17/04*

U.S. Cl. 128—334 R **11 Claims**



10. The process of attaching suturing thread to a severed tubular body duct at multiple points about said duct comprising the steps of:

inserting a flared end of an elongated core into said severed tubular body duct, said elongated core defining a plurality of longitudinally-oriented slots positioned about an outer surface thereof and located adjacent said flared end, each of said slots being of a size for receiving a needle therein, but for allowing said needle freedom for longitudinal movement therein;

driving a plurality of needles longitudinally along said slots, each needle being in a separate one of said slots and each

needle having a distal, pointed end and a proximal end attached to a suturing thread, said distal pointed ends being driven into said severed tubular body duct against said flared surface of said core thereby causing said needles to bend outwardly and be driven through the wall of said tubular body duct at said multiple points; and

forcing said needles and threads through the wall of said tubular body duct at said multiple points about said severed tubular body duct.

4,553,544

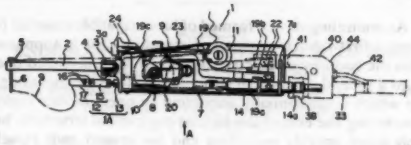
SUTURING INSTRUMENT FOR SURGICAL OPERATION

Reishi Nomoto; Masayoshi Takahashi, both of Kanagawa, and Yoshikazu Ebata, Tokyo, all of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 421,119, Sep. 20, 1982, abandoned. This application Oct. 12, 1984, Ser. No. 660,391

Int. Cl.⁴ A61B *17/06;* **D05B** *97/00*

U.S. Cl. 128—340 **5 Claims**



1. A suturing instrument for surgical operations, comprising a main body; a needle guide connected to the main body and having a needle thereon carrying a suturing thread; a shuttle holder reciprocable within said main body and carrying a shuttle extended outwardly from said main body to receive the suturing thread from the needle and cooperating with the needle for forming on a human part to be sutured up lock stitches; drive means positioned outside said main body and being operative for reciprocating said shuttle holder; connecting means for connecting said drive means to said main body; actuating means including an operating member operated externally from said main body and an actuating member positioned in said main body and connected to said operating member to be rotated thereby; switch means including a control magnet member mounted on said actuating member inside said main body, and signal-generating means for producing a signal and adapted to be actuated by said control magnet; holding means accommodating said signal-generating means and positioned outside of said main body and being partially insertable thereinto so as to insert said signal-generating means into said main body, said holding means being connected to said connecting means outside of said main body; means for transmitting said signal from said switch means to said drive means; and cable means for transmitting an output of said drive means actuated by said signal to said main body to drive the latter, whereby said switch means can operate only when said holding means is partially inserted into said main body whereas said drive means can operate for reciprocating said shuttle holder only when said drive means are connected to said main body by said connecting means so that when the operating member is pushed by an operator relative to said actuating member the actuating member is rotated to move said control magnet of said switch means toward said signal-generating means to actuate the latter to cause the signal-generating means to actuate said drive means which will reciprocate said shuttle holder when said main body and said drive means are connected to each other by said connecting means and when said holding means is partially inserted into said main body.

4,553,545

DEVICE FOR APPLICATION IN BLOOD VESSELS OR OTHER DIFFICULTLY ACCESSIBLE LOCATIONS AND ITS USE

Dierk Maass, Zürich, and Hans I. Wallstén, Denens, both of Switzerland, assignors to Medinvent S.A., Lausanne, Switzerland

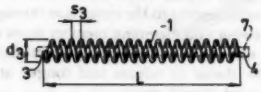
PCT No. PCT/SE82/00283, § 371 Date May 5, 1983, § 102(e) Date May 5, 1983, PCT Pub. No. WO83/00997, PCT Pub. Date Mar. 31, 1983

PCT Filed Sep. 15, 1982, Ser. No. 498,189

Claims priority, application Sweden, Sep. 16, 1981, 8105510; Apr. 30, 1982, 8202740

Int. Cl.⁴ A61M *29/00;* **C21B** *15/00*

U.S. Cl. 128—341 **19 Claims**



1. A device of the type including a helically shaped spring of a predetermined length and pitch provided with first and second ends and means for expanding the spring from a first state of a certain diameter to a second state of a larger diameter and vice versa, the improvement comprising: an arrangement of said expanding means to rotate the ends of the spring relative to each other solely by means of mechanical actuation of said expanding means so as to maintain said predetermined length of the spring, transition from said first state to said second state effected by reduction of a number of spring turns in the length of the spring with a simultaneous increase in the pitch of the spring.

4,553,546

ASSEMBLY FOR REGULATING THE ENERGY CIRCULATING IN THE MERIDIANS AND METHOD OF USE

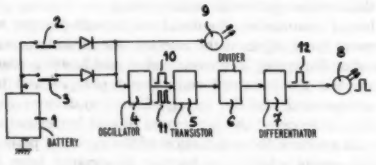
Edmond Javelle, Résidence Méridien A/21 20 rue Gembloux, 59240 Dunkerque, France

Continuation of Ser. No. 343,711, Jan. 28, 1982, abandoned. This application Apr. 24, 1984, Ser. No. 604,121

Claims priority, application France, Feb. 5, 1981, 81 02792

Int. Cl.⁴ A61N *5/00*

U.S. Cl. 128—395 **2 Claims**



1. Applicator for application to known points of acupuncture for regulating the energy circulating in the meridians of the human body in the sense of dispersion or stimulation of the energy in accordance with disorders to be treated and of the type employing radiation from an emitting diode, said applicator comprising:

a body portion;

an emittting diode carried by the body portion;

an electrical circuit means in said body portion for supplying energizing pulses to said diode such that said diode emits a chopped wave; and

the pulses being of a substantially constant amplitude and at either one of two frequencies which are related to each

other in substantially a one-to-two ratio, one of the pulse frequencies being for dispersion and the other of the pulse frequencies being for stimulation, and wherein said circuit means supplies said diode with pulses only at:

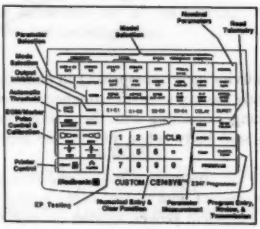
a dispersion frequency with a pulse repetition interval of 1720 microseconds plus or minus ten per cent, and

a stimulation frequency with a pulse repetition interval of 860 microseconds plus or minus ten per cent.

4,553,547
CARDIAC PACEMAKER SYNCHRONIZED PROGRAMMING

John G. Keimel, New Brighton, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 371,335, Apr. 23, 1982, Pat. No. 4,515,160.
This application Jul. 25, 1984, Ser. No. 634,236
The portion of the term of this patent subsequent to May 7, 2002, has been disclaimed.
Int. Cl.[4] A61N *1/36*
U.S. Cl. 128—419 PG **4 Claims**



1. A method of controlling the output pulse intervals of the pulses emitted by an implantable programmable cardiac pulse generator means which normally operates under the control of a main program transmitted from a control location to said pulse generator means comprising the steps of:

(a) transmitting secondary pulse interval program information from a control location to said pulse generator means which specifies the interval between at least one cardiac depolarization event and an ensuing output pulse;

(b) sensing the occurrence of cardiac depolarization events at said control location;

(c) interrupting the control of said pulse interval established by said main program of said pulse generator means upon the satisfaction of predetermined criteria by said sensed cardiac depolarization event;

(d) utilizing repeated transmissions of said secondary pulse interval program information to provide the specified interval between said cardiac events and said ensuing pulses before said ensuing pulses are specified to occur; and,

(e) re-establishing control of the operation of said pulse generator by said main program upon utilization of said secondary pulse interval program information by retransmitting said main program to said pulse generator.

4,553,548
INTERROGATOR FOR MUSCLE STIMULATOR

Anthony J. Varrichio, and Pat L. Gordon, both of Austin, Tex., assignors to Neuromedics, Inc., Coute, Tex.

Filed Aug. 19, 1983, Ser. No. 524,851
Int. Cl.[4] A61N *1/00*
U.S. Cl. 128—421 **25 Claims**

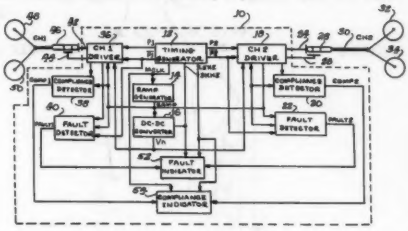
1. A method for interrogating a remote counter included in a medical treatment device, wherein the count stored in the counter indicates the accumulated time of therapy for the device, including the steps of:

generating a clocking signal;

transmitting said clocking signal over a transmission line to the clock input of the remote counter to cause it to increment;

generating a full cycle of clocking signal to the remote counter equivalent to its maximum number of counts thereby not changing the count stored within;

receiving an overflow signal from the remote counter over a



second transmission line indicating that the maximum count capacity of the counter has been exceeded;

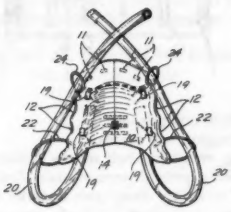
counting said clocking signal from the time said overflow signal is detected until the end of the full cycle of clocking signal thereby generating a duplication of the number of counts in the remote counter; and

storing said duplication.

4,553,549
ORAL ORTHOPEDIC/ORTHODONTIC APPLIANCE FOR TREATING NEUROMUSCULAR IMBALANCE

Bryan M. Pope, 709 Hobbs, Jefferson City, Mo. 65101, and Richard Hawkins, 4480 Kendall Cir., Gulfport, Miss. 39501

Filed Oct. 9, 1984, Ser. No. 659,094
Int. Cl.[4] A61N *1/36*
U.S. Cl. 128—421 **21 Claims**



17. A method for treating neuromuscular imbalance which hinders balanced myofacial growth and development comprising:

establishing neuromuscularly-balance rest position of the subjects mandible when the mouth is closed,

maintaining the mandible in said position, and

equalizing the pressure in the oral-pharyngeal cavity to the ambient atmospheric pressure outside the user's head whereby orthodontic and orthopedic adjustments are facilitated.

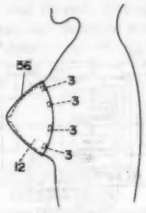
4,553,550
PERSONAL WEARING ARTICLE

Morihisa Hattori, Suita, Japan, assignor to Nikko Kakoozai Co., Ltd., Suita, Japan

Filed Apr. 22, 1981, Ser. No. 256,565
Claims priority, application Japan, Jun. 26, 1980, 55-86958
Int. Cl.[4] A41C *3/00*
U.S. Cl. 128—505 **18 Claims**

1. A two-piece breast undergarment comprising a breast

covering and a sheet-like retainer, said breast covering having fastening means on the back side thereof, said retainer having mating fastening means on the front side thereof and a pressure-sensitive adhesive layer on the back side thereof for attaching said retainer to the human body, wherein said fastening



means comprise a number of loops, said mating fastening means comprise a number of linear rods having front end hooks engageable with said loops of said fastening means, and said mating fastening means are removably fastened to said fastening means.

4,553,551

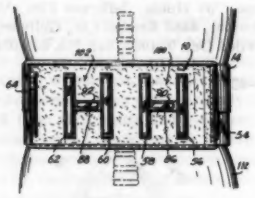
LIFTING BELT

Clifford M. Gross, New York, N.Y., assignor to Hospital for Joint Diseases Orthopedic Institute, New York, N.Y.

Filed Feb. 16, 1983, Ser. No. 466,919

Int. Cl.[4] A41C *1/00*

U.S. Cl. 128—567 **18 Claims**



1. A lifting belt; comprising:

(a) body encircling belt means;

(b) said body encircling belt means including only a first section and a second section, said first section being formed of relatively stretchable material and said second section being formed of relatively non-stretchable material;

(c) said first section and said second section being secured together at respective attaching ends to provide a belt of predetermined length and width and which has a first free end a second free end and opposed spaced longitudinally extending side edges;

(d) a plurality of bendable support means carried by said body encircling belt means and disposed at selected positions in spaced relationship with respect to each other along the longitudinal extent thereof and so as to extend from proximate one of said side edges to proximate the other of said side edges;

(e) said positions of said bendable support means being selected so that when said belt means is worn about the waist of a person and proximate their lumbar and pelvic regions that at least first predetermined ones of said plurality of bendable support means tend to prevent rapid bending of a person wearing said belt means, and so that at least second predetermined ones of said plurality of bendable support means transmit at least some of the spinal stress of the wearer to the wearer's pelvic area; and

(f) securing means disposed proximate one of said free ends of said belt means for coaction with said other of said free ends of said belt means to secure same in body encircling position about a person.

4,553,552

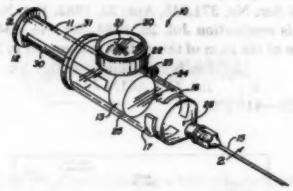
HEMODIALYSIS METER

Joseph M. Valdespino, 5023 Golf Club Pkwy., Orlando, Fla. 32808; Allen K. Holcomb, 200 W. Gore St., Orlando, Fla. 32806, and William M. Hobby, 244 Sylvan Blvd., Winter Park, Fla. 32789

Filed Feb. 21, 1984, Ser. No. 581,996

Int. Cl.[4] A61B *5/00*

U.S. Cl. 128—637 **13 Claims**



1. A conductivity meter comprising in combination:

a syringe body having a needle attached thereto;

a syringe plunger coacting with the syringe body to draw a fluid into said body when slid in one direction in said body;

a plurality of electrodes attached to said syringe body positioned for contact with a fluid in the syringe body;

a source of electrical power located on said syringe body and being operatively connected to at least one of said electrodes; and

signal output means for generating a visual output responsive to the conductivity of an electrolyte solution covering said electrodes when said source of electrical power is applied across the electrodes, whereby a self-contained syringe can test a liquid by drawing a portion of fluid into the syringe.

4,553,553

DEVICE FOR THE DETECTION OF BACTERIA, FUNGI, AND VIRUSES IN BLOOD

Ernst Homann, Laudenbach; Michael Nelboeck, Tutzing; Klaus Schlieder, Mannheim, and Gernold Bayer, Brühl, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Mar. 7, 1983, Ser. No. 472,455

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1982, 8207121[U]

Int. Cl.[4] B01D *27/00*; A61M *5/00*

U.S. Cl. 128—749 **16 Claims**

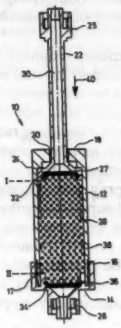
1. In a device for use in the detection of at least one of bacteria, fungi, and viruses in blood, the device having a housing, particulate adsorbent capable of binding at least one of the bacteria, fungi, and viruses from blood flowing therethrough and suitable for subsequent use in at least one of bacteriological, virological, mycological, and electron-microscopic investigations in the housing, and means for connecting the housing into an extracorporeal blood circulation in such a way that the blood flows through the particulate adsorbant in the housing, the improvement comprising:

a piston rod movably projecting through one side of the housing;

piston means on the piston rod and in the housing for forcing at least part of the particulate adsorbent out of the housing; and

a removable cover on another side of the housing such that,

when the cover is removed and the piston rod moved into the housing, the piston means forces at least part of the



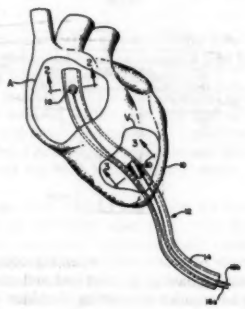
particulate adsorbent out of the housing, whereby it is available for the investigations.

4,553,554

ELECTRICAL LEAD AND METHOD FOR TEMPORARY CARDIAC PACING

Gerald M. Lemole, 404 Tomlinson Rd., Huntingdon Valley, Pa. 19046

Filed Sep. 9, 1983, Ser. No. 530,532
Int. Cl.[4] A61N *1/04*
U.S. Cl. 128—784 **7 Claims**



1. A lead for applying electrical stimulation to a heart from an external pacemaker, comprising:

a pair of wire means each adapted for communicating electrical stimulation from a pacemaker to the heart;

an elongated non-conductive means housing said wire means, said non-conductive means being formed having a slot along a portion of the length thereof;

a first electrical contact means connected to one of said wire means and fixed upon said non-conductive means so as to be adapted for intimate contact with the wall of the atrium of the heart; and

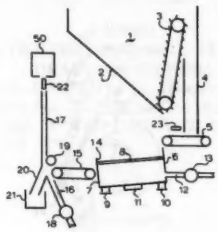
a second electrical contact means connected to the other of said wire means and movably mounted upon said non-conductive means within said slot at an adjustable longitudinal distance apart from said first contact means so as to be adapted for intimate contact with the wall of the ventricle of the heart.

4,553,555

CIGARETTE MAKING MACHINES

Adrian R. Stewart-Cox, Eastleigh, England, assignor to British-American Tobacco Company Limited, London, England

Continuation-in-part of Ser. No. 543,127, Oct. 18, 1983, abandoned. This application Feb. 9, 1984, Ser. No. 578,778
Claims priority, application United Kingdom, Oct. 19, 1982, 8229842
Int. Cl.[4] A24C *5/39*
U.S. Cl. 131—110 **6 Claims**



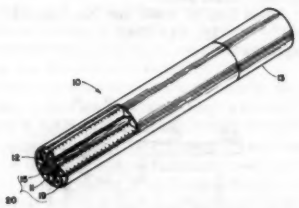
1. A smoking article making machine comprising a rod forming assembly, tobacco supply means, tobacco conveying means operable to convey cut tobacco from said supply means to said rod forming assembly, said conveying means comprising a fluidized-bed particle separator operable to separate particles of cut tobacco, said particle separator comprising a casing, an air permeable membrane extending across said casing, and fluidizing medium supply means operable to supply fluidizing medium under pressure to said casing beneath said membrane.

4,553,556

CIGARETTE HAVING A CORRUGATED WRAPPER

John O. Lephardt, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Mar. 22, 1984, Ser. No. 592,063
Int. Cl.[4] A24D *1/02*
U.S. Cl. 131—336 **4 Claims**



1. A filter cigarette, comprising an elongated rod of smoking material, a filter attached to the mouth end of the rod, and a corrugated wrapper enclosing the rod of smoking material along substantially the full length of the rod, the corrugated wrapper comprising:

a. an inner layer of sheet material peripherally enclosing the rod;

b. an outer layer of sheet material peripherally enclosing the inner layer, spaced outwardly from the inner layer and defining a gap therebetween, the gap being thinner than the minimum transverse dimension of the rod, said gap and layers of sheet material comprising from at least about 1 mm to about 2.5 mm of the diametrical thickness of the rod and the wrapper; and

c. a layer of corrugated sheet material peripherally enclosing the inner layer, forming axially extending channels, the channels being closed substantially to prevent axial flow

of smoke or air through the channels to the mouth end of the cigarette and disposed within the gap between the inner and outer layers, the corrugated sheet material providing a rigidity and firmness to the cigarette which is relatively independent of rod density.

4,553,557

HAIRPIN OPENER

Frances M. Johnson, 3739 Suncrest Dr., Lake Worth, Fla. 33463

Filed May 27, 1983, Ser. No. 498,650

Int. Cl.[4] A45D *44/00*

U.S. Cl. 132—1 R **20 Claims**

1. An apparatus for use in opening hairpins and the like, adapted to be worn on a finger, comprising:

an arched shell having a smooth edge;

a centrally disposed pedestal for supporting the shell on finger engaging means; and,

a plurality of ribs and grooves in the inner surface of the shell, radiating from the pedestal, each having one end adjacent the edge of the shell, whereby upon slipping one end of a hairpin and the like under the edge, the one end most often catches in one of the grooves, the groove guiding and directing the pin inwardly in a movement which opens the hairpin and the like simultaneously with the inward movement.

4,553,558

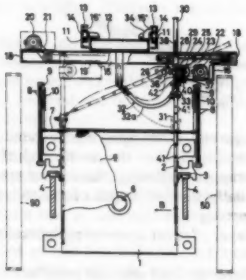
CLEANING DEVICE FOR A FILTER PRESS

Haruo Hamazaki, Yao, and Makinoda Mitsugi, Kobe, both of Japan, assignors to Kurita Machinery Manufacturing Company Limited, Osaka, Japan

Filed Feb. 28, 1984, Ser. No. 584,314

Int. Cl.[4] B08B *3/02*

U.S. Cl. 134—181 **3 Claims**



3. In a cleaning device for a filter press wherein, a spray tube is movable into a position between spaced adjacent pairs of filter plates for cleaning the filter plate surface and filter cloth, including a first carrier disposed above the filter plates movable into positions between open pairs of adjacent filter plates, a second carrier movably mounted on the first carrier to move in opposite directions thereon parallel to the surfaces of the filter plates, a spray tube supporting means mounted on the second carrier and a flexible tube connected at one end to the outlet of a source of cleaning liquid on the first carrier and at the other end to the spray tube for supplying cleaning liquid thereto, the improvement comprising:

a spray tube operating shaft rotatably mounted on the second carrier;

a reversible motor means mounted on the second carrier;

means operatively connecting said motor means to said shaft to drive said shaft by said motor means;

a spray tube operating arm mounted on said shaft to be rotated thereby and extending radially therefrom;

a spray tube support member pivotally connected to said arm at a pivot position radially spaced from said shaft, and supporting said spray tube thereon;

a stop means on said support member cooperatively engageable with said arm when said arm is in a non-used storing position with the pivotal connection above said shaft so that said spray tube is held above the filter plates;

a first support member receiving stop element projecting from said arm substantially oppositely relative to said spray tube; and

a second support member receiving stop element projecting downwardly from the second carrier;

said stop elements being positioned so that when said arm is in a position for use where the pivotal connection is below said shaft and said spray tube is substantially vertical, said support member is engaged on opposite sides by respective stop elements to retain said spray tube substantially vertically.

4,553,559

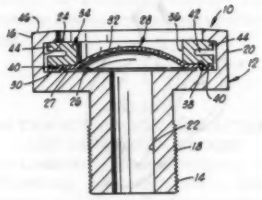
RUPTURABLE PRESSURE RELIEF ASSEMBLY

Edward H. Short, III, Tulsa, Okla., assignor to BS&B Safety Systems, Inc., Tulsa, Okla.

Continuation-in-part of Ser. No. 490,132, Apr. 29, 1983, abandoned. This application Sep. 25, 1984, Ser. No. 654,755

Int. Cl.[4] F16K *13/04*

U.S. Cl. 137—68.1 **11 Claims**



1. A rupturable pressure relief assembly comprising:

a hollow housing having an inlet end and an outlet end and including an annular supporting shoulder within the interior thereof facing the outlet end, said annular supporting shoulder having a protruding annulet of substantially rectangular cross-sectional shape formed thereon;

a circular rupture disk positioned within said housing, the outer annular portion of said rupture disk being supported by said annular supporting shoulder and said protruding annulet of said housing;

an annular supporting member positioned within said housing adjacent said rupture disk including an annular supporting surface to coact with said annular supporting shoulder in said housing and clamp the outer portion of said rupture disk therebetween, said annular supportng surface including a protruding annulet of substantially rectangular cross-sectional shape formed thereon and positioned exteriorly of said protruding annulet on said supporting shoulder of said housing;

a deformable annular spring means positioned on the opposite side of said annular supporting member from said rupture disk whereby when said spring means are de-

formed towards the inlet end of said housing, said supporting member and said rupture disk are rigidly clamped against said supporting shoulder within said housing and said protruding annulet bites into said rupture disk thereby preventing said rupture disk from moving or pulling out from between said supporting member and housing; and

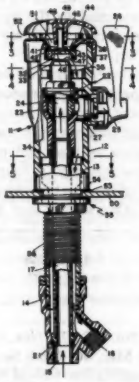
means for deforming said deformable annular spring means towards the inlet end of said housing attached to said housing.

4,553,560

ANTI-SIPHON CONTROL VALVE

Abraham I. Tucker, and Leonard G. Spelber, both of San Diego, Calif., assignors to Wastemate Corporation, San Diego, Calif.

Filed Jun. 14, 1983, Ser. No. 504,219
Int. Cl.[4] F16K *24/02*
U.S. Cl. 137—218 **4 Claims**



1. An anti-siphon control valve for fluid flow comprising;

an enclosed, elongated housing having a first end, a top end, an exterior wall, and an open interior;

an inlet tube mounted within said housing, said tube having a first end secured within said first end of said housing, and a top end having an outlet port positioned within the interior of said housing intermediate said first and top ends thereof; said top end being cone-frustum shaped externally;

an open/close valve in said inlet tube for controlling fluid flow through said inlet tube; said valve having an open position for providing for substantially unobstructed fluid flow through said inlet tube;

means operatively connected to said open/close valve and extending outside said housing for controlling the operation of said open/close valve;

a poppet valve assembly mounted to said top end of said housing, said assembly having vent openings therethrough, and the interior of said housing being selectively in communication with the atmosphere through said vent openings, said poppet valve assembly further comprising:

a valve seat;

a vertically movable poppet valve having an open position whereby said poppet valve seats against and closes said outlet port of said inlet tube when the fluid pressure in said inlet tube at said outlet port is less than or substantially equal to the fluid pressure in the interior of said housing between said outlet port and said housing wall, and whereby said poppet valve opens said outlet port of said inlet tube and engages said valve seat to close the interior of said housing to the atmosphere when the fluid pressure within said inlet tube adjacent said outlet port is greater than the fluid pressure in the interior of said housing adjacent and exterior to said outlet port; and said poppet valve is formed with a cup-faced side facing said outlet port, said cup-shaped side for selectively redirecting fluid flow in reverse direction around said inlet tube in the closed position, and for closing said outlet port in the open position; the shape of said cup-shaped side being such that no fluid escapes through said vent openings upon moving to the closed position; and

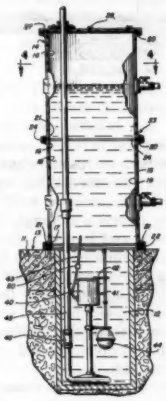
an exit port in said housing wall adjacent said first end of said housing for fluid communication between the interior and exterior of said housing.

4,553,561

DEVICE FOR THE PREVENTION OF FLOODING FROM DRAINAGE SYSTEMS

Daniel C. Morris, 1450 W. 71st St., Downers Grove, Ill. 60516

Filed Jun. 22, 1984, Ser. No. 623,476
Int. Cl.[4] E03F *5/12*; A47K *1/14*
U.S. Cl. 137—362 **15 Claims**



1. A flood control device to limit flooding from a drainage structure, sump well or the like, having an apron defining an opening and extending below a floor, the device being removeably and sealably installable on the apron and extending above the opening and the device comprising:

(a) an upper and a lower container segment, each segment including a tubular member having a top end, a bottom end and a substantially rigid sidewall between the two ends together defining an enclosure and the sidewall defining at least one raised planar surface, each container segment also including a top flange sealingly mounted on the top end and bottom flange sealingly mounted on the bottom end, said top and bottom flanges extending outwardly from the sidewall of the tubular member and each defining a sealing surface;

(b) a cover removeably and sealably mountable on said sealing surface defined by the top flange wherein said flange defines the sealing surface of the upper container segment;

(c) coupling means associated with the sealing surfaces of the bottom flange of the upper container segment and the top flange of the lower container segment for providing a liquid tight seal between the upper and lower container segments; and

(d) attachment means associated with the bottom flange of the lower container segment for removeably and sealingly mounting the lower container segment on the apron about the opening whereby said device extends above the level of said floor to contain flooding from said sump well,

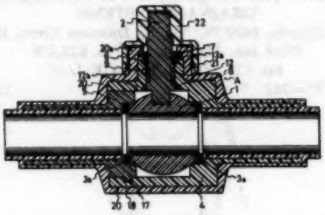
drainage structure or the like in the event that the level of liquid within the sump well, the drainage or like structure exceeds the containment capacity of the drainage structure.

4,553,562

RESIN-MOLDED VALVE AND METHOD OF MAKING THE SAME

Morihito Nakada, Namerikawa, Japan, assignor to Toyo Kako Kabushiki Kaisha, Toyama, Japan

Filed Oct. 25, 1983, Ser. No. 545,403
Claims priority, application Japan, May 4, 1983, 58-78647
Int. Cl.⁴ F16K *5/06*
U.S. Cl. 137—375 **13 Claims**



1. A valve, comprising:

a preassembled valve body of resin, including an inner housing having a fist port therein and having a cavity therein which is in fluid communication with said first port, a housing cap having a portion lockingly held in said cavity in said inner housing and having a second port therein which is in fluid communication with said cavity in said inner housing, a valve element movably supported in said cavity so as to permit adjustment of the degree of fluid communication between said first and second ports, and a driving stem which extends through an opening in said inner housing and is coupled to said valve element for effecting movement thereof; and

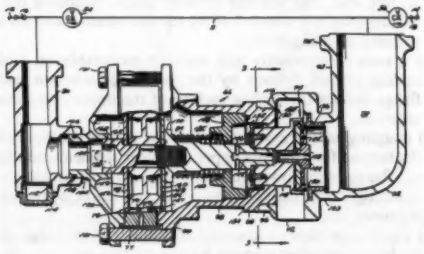
a cover of resin provided over said preassembled valve body so as to substantially cover exterior surfaces of said inner housing and said housing cap.

4,553,563

RELIEF VALVE ASSEMBLY FOR USE WITH BACKFLOW PREVENTERS

Joseph L. Daghe, Decatur, and Robert E. Sands, Shelbyville, both of Ill., assignors to Mueller Co., Decatur, Ill.

Division of Ser. No. 383,306, May 28, 1982, Pat. No. 4,506,694. This application Dec. 3, 1984, Ser. No. 677,691
Int. Cl.⁴ F16K *31/126, 24/00*
U.S. Cl. 137—494 **14 Claims**



8. A differential pressure relief valve assembly for mounting in a horizontal position on a backflow preventer system having at least one check valve, said differential relief valve assembly comprising:

a housing having a horizontal axis, said housing including an elbow-shaped first member defining a passage with a liquid inlet adapted to be connected to the system on one side of the check valve and a downwardly facing liquid outlet open to atmosphere, said housing further having a generally tubular second member having one end threadedly connected to said first member and another end closed by a cap plate having an opening therethrough with an annular collar surrounding the opening and extending outwardly thereof;

an elbow-shaped connector member having a passage with a liquid inlet adapted to be connected to the system on the other side of the check valve and an outlet slidably receivable on said collar;

sealing means between said collar and said connector member;

a valve seat ring threadedly carried by said elbow-shaped first member and having a seat coaxially aligned with the axis of said housing;

a rolling diaphragm means carried by said second member and having one face exposed to the opening through said cap plate and the other face operatively exposed to the passage in said first member;

a valve element for cooperating with said valve seat, said valve element being operatively connected to said diaphragm means for movement dependent upon changes in differential pressure across said diaphragm means;

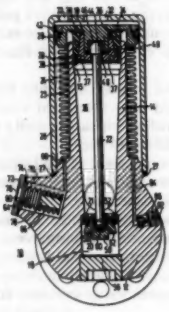
sealing means between said second member and said valve element and a passageway through said valve element whereby pressure of fluid in the passage of said first member is exposed to the other side of said diaphragm means.

4,553,564

VALVE

David Baram, 19, Meadow Bank Ave., Sheffield, England (S7 1PB)

Continuation of Ser. No. 318,873, Nov. 6, 1981, abandoned. This application Mar. 30, 1984, Ser. No. 595,298
Claims priority, application United Kingdom, Nov. 7, 1980, 8035791; Dec. 5, 1980, 8039083; Jan. 20, 1981, 8101590; Oct. 27, 1981, 8132348
Int. Cl.⁴ F16K *37/00, 31/163;* F16J *9/12*
U.S. Cl. 137—554 **45 Claims**



1. A valve comprising a housing having a head end, and open-ended portion of circular internal cross-section, an inlet port and an outlet port, a flow chamber interconnecting the ports, an obturator located within the flow chamber, a moveable head positioned at said head end to which said obturator is attached whereby fluid flow through said valve may be regulated by said obturator by movement of said head, a seal which is retained on said head, said seal bearing upon and sealing said open-ended portion of the housing so as to resist fluid flow past said head, and biasing means which apply a uniform bias to the circumference of said seal, said biasing

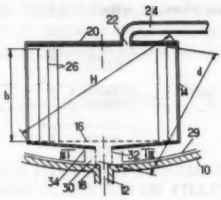
means being independent of system fluid pressure said sealing being nonenhanced by system fluid pressure.

4,553,565

LIQUID STORAGE RESERVOIR WITH CAPILLARY CONFINEMENT

Alain Kerebel, Paris, France, assignor to Matra, Paris, France

Filed Jun. 19, 1984, Ser. No. 622,322
Claims priority, application France, Jun. 20, 1983, 83 10161
Int. Cl.⁴ B64D *37/08*
U.S. Cl. 137—590 **11 Claims**



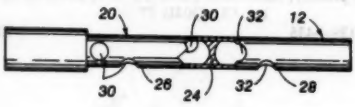
1. A storage reservoir for pressurized liquid storage, comprising a reservoir wall, a liquid outlet passage through said reservoir having a surface tension retention device defining a buffer zone communicating with said outlet passage and communicating with supply channels formed along the wall of the reservoir through orifices and a liquid meniscus breakage zone, wherein said orifices are capillary and are provided in a partition situated in the immediate proximity of a point of drawing-off through the outlet passage, which partition defines, with a capillary storage volume, a dead space of comperatively small volume.

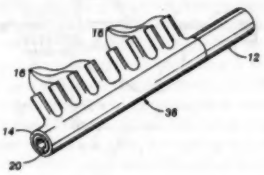
4,553,566

ROTARY MULTIPOSITION VALVE

John A. Barclay, and Jack E. Dyson, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 6, 1984, Ser. No. 597,802
Int. Cl.⁴ F16K *11/07*
U.S. Cl. 137—625.11 **12 Claims**





1. A rotary multiposition valve for selectively directing the flow of a fluid through a plurality of paths comprising:

a. a housing, said housing having a portion defining a hollow tube;

b. a plurality of ducts, said ducts being disposed longitudinally in a spaced-apart relationship on the periphery of said housing and being in fluid communication with said hollow tube; and

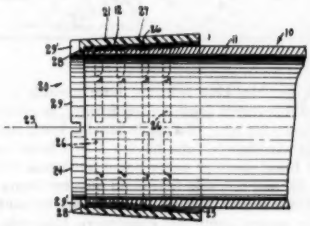
c. an inner member having an engaging section and a base section connected thereto, said engaging section being received in said hollow tube and having a seal means disposed within and dividing said engaging section into a hollow inlet segment and a hollow outlet segment, said base section being outside of said hollow tube and having a hollow interior segment in fluid communication with said inlet segment, said inlet segment having portions defining a plurality of inlet apertures, said plurality of inlet apertures being disposed in a longitudinally and radially spaced-apart pattern in said inlet segment, said outlet segment having portions defining a plurality of outlet apertures, said plurality of outlet apertures being disposed in a corresponding spaced-apart pattern in said outlet segment, so that as said inner member is rotated relative to said housing, whenever an inlet aperture overlaps with one of said ducts, the corresponding outlet aperture will overlap with a different duct, whereby a fluid pathway is formed through which fluid introduced into said base section can flow when the corresponding ducts are connected.

4,553,567

PIPE THREAD PROTECTOR

Lee W. Telander, 1810 Manor Dr., Alexandria, Minn. 56308

Continuation of Ser. No. 605,126, Apr. 30, 1984, abandoned, which is a continuation-in-part of Ser. No. 282,067, Jul. 10, 1981, abandoned. This application Mar. 7, 1985, Ser. No. 709,823
Int. Cl.⁴ B65D *59/00*
U.S. Cl. 138—96 T **24 Claims**



4. A removable protector for a tapered and internal threaded end section of a cylindrical pipe extending axially from one end thereof, wherein said pipe is subject to moisture and temperature extremes, said protector comprising: a tubular body of substantially rigid plastic material for telescoping reception and substantially concentric positioning in unsealed relation with respect to a said threaded end section of the pipe to protect the same, said tubular body having a first end, a second end opposite therefrom, a longitudinal axis therethrough, and inner and outer wall surfaces extending between said ends, said body first end having radially projecting stop means thereon for engagement with said pipe to limit telescoping motion with respect thereto, said tubular body wall surfaces having a taper between the ends thereof substantially similar to that of the tapered and threaded end section of the pipe with which the same is telescopingly associated, said outer wall surface of said body adapted to be disposed in spaced telescoped confronting relation to said internal threaded end section of the pipe, a plurality of circumferentially disposed flexible ribs extending freely from said outer wall surface of the body for engagement with a threaded end section of the pipe, said ribs being disposed on said outer wall surface of said body for cooperative association with the tapered and internally threaded end section of the pipe, said ribs forming an acute angle with said body wall surface in unflexed condition and normally extending in a direction from said first end toward said second end of said

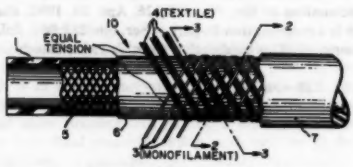
body, said ribs having sufficient flexibility to revert upon engagement and axial telescoping motion with respect to a said threaded end section of the pipe thereby to extend in a direction from said body second end towards said body first end, said outer wall surface of said body with said ribs thereon having a diameter sufficient to radially space said outer wall surface from said threaded end section of the pipe so that said reverse flexing of said ribs occurs upon telescoping said protector with respect to said pipe, and to preclude circumferential and radial destructive stress contact between said threaded end section of the pipe and said protector wall surfaces upon thermal expansion and contraction of said pipe, and wherein said spacing allows fluids to flow through the space, said stop means at said body first end having means for cooperation with a tool to unthread the protector when desired from a said threaded end section of the pipe.

4,553,568

SHAPE RESTORING HOSE

Dante E. Piccoli, Canton, and Pradeep D. Nadkarni, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 562,665, Dec. 19, 1983, abandoned.
This application May 8, 1985, Ser. No. 731,759
Int. Cl.[4] F16L *11/10*
U.S. Cl. 138—125 **9 Claims**



1. A flexible, kink resistant hose capable of regaining an original shape after crushing comprising: an elastomeric tube; a shape restoring layer of a single braided spiral sleeve surrounding said elastomeric tube having a first braid member and a second braid member under equal tension at braid angles between 50° and 60°, said first braid member being composed of at least one strand of relatively stiff, uncrimped monofilament helically wound about said elastomeric tube only in one direction to form a uniform diameter non-overlapping spiral, wherein said uncrimped monofilament is selected from the group consisting of polyesters, copolyesters, aromatic polyamides, non-aromatic polyamides and fiberglass, said second braid member being composed of a plurality of relatively flexible, crimped textile filaments helically wound only in an opposite direction to said first braid member and interwoven with said first braid member such that said second braid member is crimped at each point of contact with said first braid said monofilament contacting only said second braid member, whereby said braided spiral layer acts to restore the hose to the original shape after crushing.

4,553,569

CONTROL METHOD OF STOPPING A LOOM AT A PREDETERMINED POSITION THEREOF

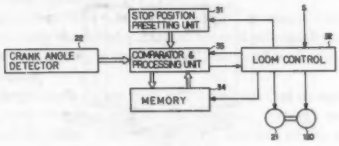
Masahiko Kimbara, and Akio Arakawa, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Apr. 4, 1984, Ser. No. 596,545
Claims priority, application Japan, Apr. 13, 1983, 58-63737
Int. Cl.[4] D03D *51/00*
U.S. Cl. 139—1 E **7 Claims**

1. A method of stopping a loom at a predetermined position thereof in a weaving operation wherein the braking load is varied with operating cycles of the loom in repeated patterns each of which includes a group of succeeding different phases which are of a number N, greater than one, said pattern and said number N being determined according to the kind of texture of fabric to be woven, said method comprising:

first step of separately detecting, for each phase in which the loom is stopped, the quantity of deviation, if any, of the actual stop position of the loom from said predetermined position resulting from loom braking operation in the same phase that precedes the current braking operation and storing data regarding said deviation;

second step of executing arithmetic operation on said data for compensation thereby to adjust the position at which brake is to be applied in the current loom braking operation for said phase in which the loom is stopped;



third step of applying braking when said position determined through said arithmetic operation is reached by the loom; and

fourth step of detecting for said phase in which the loom is stopped the quantity of deviation, if any, of the actual stop position of the loom from said predetermined position resulting from the current braking operation in said phase in which the loom is stopped;

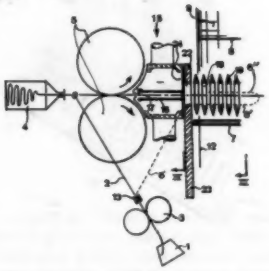
said steps being performed for each group of corresponding phases in which the variation in said braking load in each group is substantially the same.

4,553,570

PROCESS FOR THE INSERTION IN THE FORM OF A LOOP OF A WEFT YARN IN THE SHED OF A WEAVING MACHINE AND WEAVING MACHINE EQUIPPED WITH A DEVICE FOR CARRYING OUT THIS PROCESS

Albert Moessinger, Vaud, Switzerland; Guy Gosciniak, Illfurth, and Joël Angebault, Riedisheim, both of France, assignors to Societe Alsacienne de Construction de Material Textile, Mulhause, France

Filed Aug. 30, 1983, Ser. No. 527,848
Claims priority, application France, Sep. 3, 1983, 82 15144
Int. Cl.[4] D03D *47/30*
U.S. Cl. 139—435 **6 Claims**



1. A weaving machine of the type comprising:

a reserve of weft yarn located outside the shed;

a metering device issuing a given length of yarn into an accumulator;

an inserting member drawing the yarn from the accumulator and throwing it in the form of a loop having one end fastened and one end thrown;

means for pressing against the fell of cloth the weft yarn which has just been inserted;

pneumatic means producing an air stream inside the shed, during the insertion, the speed of the air stream being at most equal to the speed of the thrown end and being exerted at least over a major part of the length of said shed, said air stream tending to maintain the two ends of the loop separate from each other;

wherein the air stream produced by the pneumatic means is confined inside the shed by a channel constituted by leaves spaced apart from one another to allow passage of the warp yarn therebetween;

and wherein the pneumatic means comprises a single nozzle disposed near the entrance of the shed, the outlet aperture of the nozzle presenting a section similar to that of the channel.

4,553,571

APPARATUS FOR THE CONSTRAINED ACTUATION OF THE CLAMPING SYSTEM OF FILLING YARN INSERTION DEVICES IN SHUTTLELESS WEAVING MACHINES

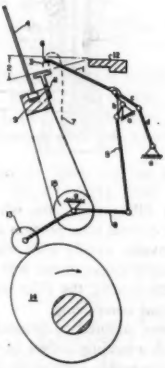
Fritz Gehring, Lindau-Bodolz, and Stephan Arndt, Sigmarszell, both of Fed. Rep. of Germany, assignors to Lindauer Dornier Gesellschaft mbH, Lindau, Fed. Rep. of Germany

Filed Mar. 20, 1984, Ser. No. 591,497

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1983, 3320064

Int. Cl.⁴ D03D *47/18*

U.S. Cl. 139—446 **6 Claims**



1. In an apparatus for controlling the opening and closing of a thread gripper device in a shuttleless weaving machine, wherein a control member for said gripper device is driven by cam and cam follower means including a first rocker lever carrying a cam follower, the improvement comprising articulated link drive means (b, c, d) including a second rocker lever (b), pivot means (a) securing said link drive means in an articulated manner to said machine, a coupling link (5) articulated at one end to said first rocker lever (8) and at the other end to said second rocker lever (b) for transmitting a cam drive motion from the first rocker lever (8) to said second rocker lever (b), said articulated link drive means further including a guide link (d) and a connector link (c) articulated to said second rocker lever (b) and to said guide link (d) which is pivoted to said machine, said connector link (c) having an extension (1) forming said control member for controlling the operation of said gripper device in accordance with a control path (6, 7) enforced by said articulated link drive means.

4,553,572

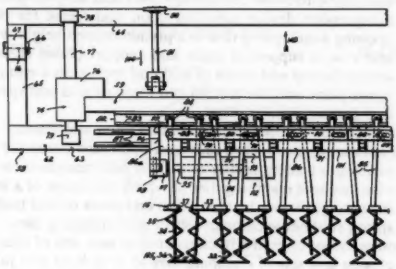
COIL SPRING ASSEMBLY MACHINE

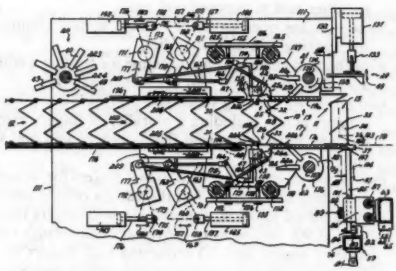
Henry Zapletal, Carthage, Mo.; Horst F. Wentzek, and George M. Chembakaffery, both of Kenosha, Wis., assignors to Leggett & Platt, Incorporated, Carthage, Mo.

Division of Ser. No. 300,995, Sep. 10, 1981, Pat. No. 4,492,298. This application May 17, 1984, Ser. No. 611,370

Int. Cl.⁴ B21F *21/00*

U.S. Cl. 140—92.8 **6 Claims**





1. A machine for manufacturing coil spring assemblies, said machine comprising

a frame,

a support platen mounted upon said frame,

means mounted adjacent said support platen for moving successive rows of coil springs onto said support platen,

a compression device mounted upon said frame for compressing a coil spring row to a predetermined height while said row is supported upon said support platen so as to locate the top end loops of said coil springs in a common upper plane and the bottom end loops of said coil springs in a common lower plane,

plural sets of clamping dies mounted upon said frame, each of said sets of dies including a leading and a trailing die,

an advancing mechanism mounted upon said frame for advancing said trailing spring row from said compression device into said closed leading clamping dies at which end loops of a leading spring row are juxtaposed to end loops of said trailing spring row between closed leading dies and open trailing dies of each of said sets of said clamping dies,

motive means operatively connected to said trailing dies for closing said trailing clamping dies so as to hold said juxtaposed spring rows in juxtaposition while said rows are tied together,

feeding means mounted on said frame for directing a helical lacing wire through said closed sets of clamping dies so as to lace together said juxtaposed coil rows,

motive means operatively connected to said leading and

trailing dies for opening both of said leading and trailing dies of said sets of clamping dies, and

a feed-out mechanism mounted on said frame for feeding a coil spring assembly away from said open sets of clamping dies.

3. A machine for manufacturing coil spring assemblies, said machine comprising

a frame,

a support platen mounted upon said frame,

means mounted adjacent said support platen for moving successive rows of coil springs onto said support platen,

a compression device mounted upon said frame for compressing a coil spring row to a predetermined height while said row is supported upon said support platen so as to locate the top end loops of said coil springs in a common upper plane and the bottom end loops of said coil springs in a common lower plane,

plural sets of clamping dies mounted upon said frame,

an advancing mechanism mounted upon said frame for advancing a trailing spring row from said compression device into said clamping dies at which end loops of a leading spring row are juxtaposed to end loops of said trailing spring row between open sets of said clamping dies,

motive means operatively connected to said sets of dies for closing said sets of clamping dies so as to hold said juxtaposed spring rows in juxtaposition while said rows are tied together,

feeding means mounted on said frame for directing a helical lacing wire through said closed clamping dies so as to lace together said juxtaposed coil rows,

motive means operatively connected to said clamping dies for opening said clamping dies,

a mechanism mounted on said frame for feeding a coil spring assembly away from said open clamping dies,

said means for moving successive coil spring rows onto said support platen including a plurality of fingers extendable into and retractable from the barrels of said coil springs, and

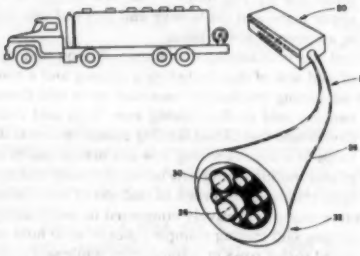
means operatively connected to said fingers for, in sequence, extending said fingers into the barrels of said coil springs at an infeed location, (b) pivoting said fingers through at least at 90° arc so as to move said coil springs onto said support platen, and (c) retracting said fingers from said coil springs so as to leave said coil springs deposited upon said support platen.

4,553,573

BULK SYRUP DELIVERY SYSTEM

Robert McGarrah, Melville, N.Y., assignor to PepsiCo Inc., Purchase, N.Y.

Filed Oct. 20, 1983, Ser. No. 543,846
Int. Cl.⁴ B65B *3/04*
U.S. Cl. 141—98 **28 Claims**



21. A bulk syrup system for the bulk receipt and storage by an account of a plurality of different flavored syrups, to thereby eliminate many of the problems associated with the delivery of syrups to accounts in individual transfer containers, the delivery of which requires a substantial amount of manual labor in a time consuming and labor intensive delivery operation, and also eliminates the sizeable investment in transfer tanks and the problems associated with the storage of and connection to the transfer tanks, the bulk delivery system, comprising:

a. the account having a plurality of separate syrup storage tanks for the receipt and storage of a plurality of different flavored syrups;

b. a multichannel hose coupled at a first end to said plurality of separate syrup storage tanks and having at least one channel for each different flavored syrup; and

c. a syrup delivery receiving terminal mounted exterior to a building at the account, comprising a terminal housing with a lock thereon to prevent unauthorized access thereto; and

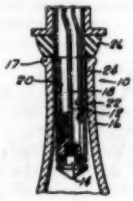
d. a multichannel receiving coupling at a second, syrup delivery receiving end of said multichannel delivery hose mounted in said syrup delivery receiving terminal, and having a plurality of closure valves therein, one for each channel in the delivery coupling, whereby a bulk syrup delivery to the account can be made by coupling a multichannel delivery coupling from a syrup delivery truck to said receiving coupling.

4,553,574

VALVE TIP FOR FILLING APPARATUS

Giovanni G. Le Donne, Coraopolis, Pa., assignor to Horix Manufacturing Co., Pittsburgh, Pa.

Filed Sep. 22, 1983, Ser. No. 534,811
Int. Cl.⁴ B67C *3/26*
U.S. Cl. 141—286 **7 Claims**



1. In a container filling apparatus wherein a filler valve assembly includes a ce..tral tube portion and a coaxial sleeve portion which is movable axially with respect to said central tube portion into biased engagement with a valve tip sealing means for selectively closing the filler valve assembly, said valve tip sealing means comprising:

a rigid seal member adapted to present a seal surface for engagement with a mating surface of such sleeve portion;

securing means cooperable with such central tube portion for captively retaining said rigid seal member with respect to such central tube portion with said seal surface positioned for such biased engagement thereof by such sleeve portion;

resiliently deformable backup means captively retained with respect to said rigid seal member to support said rigid seal member in a manner that said deformable backup means is resiliently deformable upon biased engagement of said rigid seal member by such sleeve portion; and

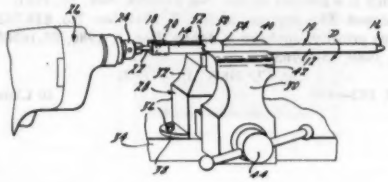
said rigid seal member being movable with respect to such central tube portion to selected misaligned orientations corresponding to respective misaligned orientations of such sleeve portion with respect to such central tube portion by deformation of said backup member in response to a bias of said sleeve portion upon said rigid seal member whereby said rigid seal member is oriented for effective sealing engagement with such sleeve portion when said valve assembly is closed.

4,553,575

DOWEL CUTTER AND SIZER

Kenneth L. Brown, 15913 Amherst, Birmingham, Mich. 48009

Filed Dec. 13, 1983, Ser. No. 561,213
Int. Cl.[4] B27C 9/00
U.S. Cl. 144—12 14 Claims



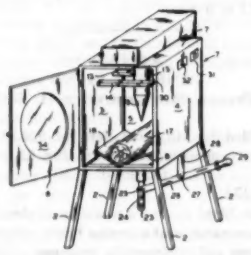
1. A dowel cutter apparatus comprising
a rotatable chuck;
means for rotating said chuck;
means for holding a length of woodstock in said chuck to be rotatable with said chuck;
A cylindrical cutting tool having a cylindrical inner surface, a cylindrical outer surface, an inside diameter, an input end having at least one cutting edge disposed along said inside diameter, an output end spaced apart from said input end, and at least one planar face extending from said cutting edge on said inner surface to said outer surface, forming an angle with a line parallel to said axis, and intersecting said edge;
means for holding said tool in a stationary position;
wherein said woodstock is rotated by said chuck and inserted axially into said tool at said cutting edge to form a length of dowel.

4,553,576

WOOD SPLITTING MACHINE WITH A THREADED ROTATING CONE

Gérard Maingueneau, Les Trois-Moutiers, France, assignor to Mecanique des Moutiers Route de Loudun, Les Trois Moutiers, France

Filed Jul. 24, 1984, Ser. No. 634,045
Int. Cl.[4] B27L 7/00
U.S. Cl. 144—194 9 Claims



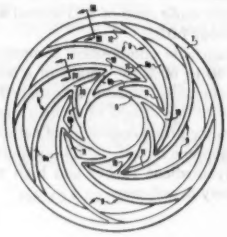
8. A log splitter comprising a closed box having a vertically positioned cone splitter rotatably mounted with its point extending downwardly, motor driven means for rotating said cone splitter, said driven means being an electrical motor and means for reversing the direction of cone rotation by reversing the turning direction of said motor means, a V-support beneath said cone for supporting said log in a horizontal position with the cross section of the log centered under said cone splitter, and elevator means comprising a lever arm for raising said V-support to engage said cone splitter, said box being too small relative to the length of said log for said log to rotate freely under the impact of the rotation of said cone splitter.

4,553,577

WHEEL STRUCTURE WITH RESILIENT SPOKES

John D. W. Gregg, Tobarcooran House, Glebe West, Newtownabbey, Northern Ireland

Continuation of Ser. No. 319,394, Nov. 9, 1981, abandoned. This application May 14, 1984, Ser. No. 609,865
Claims priority, application United Kingdom, Nov. 10, 1980, 8036070
Int. Cl.[4] B60B 9/26
U.S. Cl. 152—12 17 Claims



12. A wheel structure of integral synthetic polymer material comprising: a continuous rim integrally connected to a hub by a plurality of equispaced identical spokes, each of said spokes inculding a shorter portion connected to said hub at a hub origin point and a longer portion connected to said rim at a rim origin point, said portions of each spoke extending from their respective origin points in generally different directions and meeting at a meeting location that is radially closer to said hub than to said rim, whereby flexure takes place around said meeting location to resiliently support a load applied to said wheel structure, each of said spokes further comprising an extension to said longer portion originating at said meeting location and extending towards the meeting location of the next spoke to provide a mechanical stop against distortion.

4,553,578

STAR-SHAPED POLYMERS FOR IMPROVED TIRE TREADS

Francis J. Vitus; Ivan G. Hargis; Russell A. Livigni, and Sundar L. Aggarwal, Summit County, all of Ohio, assignors to GenCorp Inc., Akron, Ohio

Continuation-in-part of Ser. No. 421,699, Sep. 22, 1982, Pat. No. 4,497,748, which is a division of Ser. No. 282,671, Jul. 13, 1981, Pat. No. 4,409,368. This application Jan. 30, 1985, Ser. No. 696,555
The portion of the term of this patent subsequent to Oct. 11, 2000, has been disclaimed.
Int. Cl.[4] B60C 11/00; C08L 67/06; C08F 227/04
U.S. Cl. 152—209 R 6 Claims

1. A tire having a tread of a compounded carbon black reinforced and vulcanized composition of a blend of (A) from about 40 to 60% by weight of a solution polymerized rubbery substantially random star-shaped polymer and (B) from 60 to 40% by weight of at least one rubbery polymer selected from the group consisting of natural rubber, synthetic cis-1,4-polyisoprene rubber, cis-1,4-polybutadiene rubber, high trans-1,4-polybutadiene rubber and high trans-1,4-butadiene-styrene rubbery copolymer,
(A) being at least one polymer selected from the group consisting of polybutadienes, polyisoprenes, butadiene-styrene copolymers, butadiene-isoprene copolymers, isoprene-styrene copolymers, butadiene-isoprene-styrene copolymers and mixtures of the same, said styrene containing copolymers containing up to about 30 weight % of

styrene, preferably from about 10 to 25 weight % of styrene,

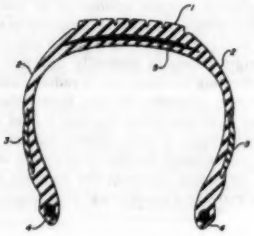
having a vinyl content for the diene segments of from about 12 to 60 weight %,

having an average of from about 4 to 9 arms,

having a $\overline{Mn}$ of from about 100,000 to 500,000,

and having a nucleus from an initiator (1) having a VPO $\overline{Mn}$ of from about 750 to 4,000, (2) having an average of from about 4 to 9 C-Li sites and (3) being the adduct of an aromatic compound selected from the group consisting of divinyl benzene and diisopropenyl benzene and mixtures thereof and RLi where R is selected from the group consisting of normal, secondary and tertiary alkyl and cycloalkyl radicals of from 2 to 20, or from 2 to 10, carbon atoms, the mold ratio of RLi to said aromatic compound being about 1:0.83.

3. A vulcanizable composition comprising a blend of (A) from about 40 to 60% by weight of a solution polymerized rubbery substantially random star-shaped polymer and (B) from 60 to 40% by weight of at least one rubbery polymer selected from the group consisting of natural rubber, synthetic cis-1,4-polyisoprene rubber, cis-1,4-polybutadiene rubber, high trans-1,4-polybutadiene rubber and high trans-1,4-butadiene-styrene rubbery copolymer,



(A) being at least one polymer selected from the group consisting of polybutadienes, polyisoprenes, butadiene-styrene copolymers, butadiene-isoprene copolymers, isoprene-styrene copolymers, butadiene-isoprene-styrene copolymers and mixtures of the same, said styrene containing copolymers containing up to about 30 weight % of styrene, preferably from about 10 to 25 weight % of styrene,

having a vinyl content for the diene segments of from about 12 to 60 weight %,

having an average of from about 4 to 9 arms,

having a $\overline{Mn}$ of from about 100,000 to 500,000,

and having a nucleus from an initiator (1) having a VPO $\overline{Mn}$ of from about 750 to 4,000, (2) having an average of from about 4 to 9 C-Li sites and (3) being the adduct of an aromatic compound selected from the group consisting of divinyl benzene and diisopropenyl benzene and mixtures thereof and RLi where R is selected from the group consisting of normal, secondary and tertiary alkyl and cycloalkyl radicals of from 2 to 20, or from 2 to 10, carbon atoms, the mold ratio of RLi to said aromatic compound being about 1:0.83.

4,553,579

PNEUMATIC TIRES HAVING A HIGH RESISTANCE TO CUT GROWTH

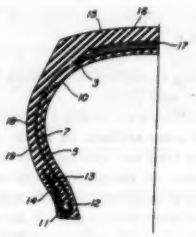
Kenji Matsumoto, Kodaira, and Yasuo Suzuki, Akigawa, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation of Ser. No. 438,187, Nov. 1, 1982, abandoned, which is a division of Ser. No. 324,898, Nov. 25, 1981, abandoned. This application Jun. 7, 1984, Ser. No. 618,752

Claims priority, application Japan, Dec. 3, 1980, 55-169658; Dec. 3, 1980, 55-169659

Int. Cl.⁴ B60C *5/14, 1/00*

U.S. Cl. 152—450 **10 Claims**



1. A pneumatic tire having an excellent cut resistance, comprising: an annular crown portion constituting a tread, a pair of side portions supporting said crown portion, a pair of bead portions located at each foot of said side portions for fitting to a rim, a carcass layer composed of at least one rubberized cord ply toroidally extending between said bead portions and a liner layer disposed inside and adjacent to said carcass layer, and, a low modulus middle rubber layer consisting of rubber having a 300% modulus of not more than 30 kg/cm^2 and lower than that of the rubber adjacent to said middle rubber layer, said middle rubber layer intercepting the crack growth from the outside of the tire, said low modulus middle rubber layer disposed in said liner layer at said side portion and having a thickness of 0.2 to 5 mm.

4,553,580

VENETIAN BLIND

Evert Christoffersson, Stenbrunnsvagen 11, S-216 22 Malmo, Sweden

Filed Jun. 15, 1983, Ser. No. 504,131

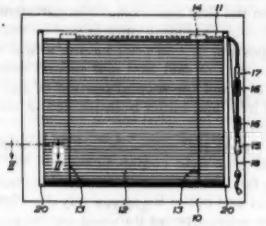
Claims priority, application Sweden, Jun. 15, 1982, 8203704

Int. Cl.⁴ E06B *9/30*

U.S. Cl. 160—172 **19 Claims**

1. A venetian blind having a plurality of slats for mounting in a window casement, said venetian blind comprising a channelled suspension rail horizontally arranged at the top of said window casement, an operating mechanism mounted to said suspension rail for manipulation of said slats, a pull cord, a flexible shaft connected to said operating mechanism, a conducting piece arranged in said channelled suspension rail for the extension of said pull cord and said flexible shaft through an opening formed in the side of said suspension rail, a pair of guide rails for guiding said slats, said guide rails vertically mounted along opposed vertical sides of said window casement and supporting said suspension rail horizontally therebetween, engaging means arranged on one of said guide rails for releasably engaging an adjacent portion of one end of said

suspension rail, and a latch element arranged at the other end of said suspension rail for securely engaging an adjacent portion of the other of said guide rails upon manipulation of said latch element.

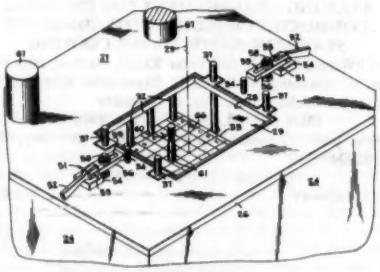


4,553,581

SAND MOLD MAKING MACHINE APPARATUS AND METHOD IMPROVEMENTS

John J. Uppgren, St. Paul, and James W. Scott, Minneapolis, both of Minn., assignors to FMC Corporation, Chicago, Ill.

Filed Apr. 11, 1983, Ser. No. 483,792
Int. Cl.⁴ B22C *15/24*
U.S. Cl. 164—16 **17 Claims**



8. A method of forming cores and molds on a core blowing machine of the type which sequentially dispenses mold sand and bonding agent mixture and gaseous medium for hardening the mold mixture, wherein a gassing chamber is mounted on the machine having an opening in one surface thereof adapted to accept a match plate, and further having a support platform therewithin aligned with the opening and spaced from the one surface, comprising the steps of

constructing a reference surface having a match plate receiving aperture therein,

spacing an auxiliary support platform from the reference surface by substantially the same spacing between the one surface of the gassing chamber and the support platform,

positioning the match plate in the receiving aperture and against the reference surface,

adjusting the length of a support jack to extend between and substantially conform in length to the distance between the match plate and the auxiliary support platform,

noting the position of the support jack on the auxiliary support platform,

placing the support jack in position on the support platform in the gassing chamber corresponding to the noted position,

positioning the match plate in the opening in and against the one surface of the gassing chamber, and

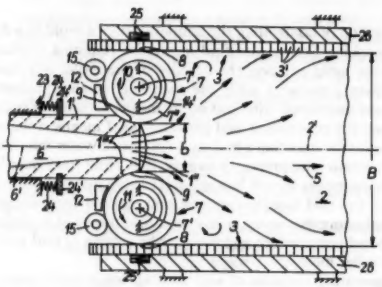
surrounding the match plate in the last mentioned position with a flask, whereby match plate bending deformation due to sequential dispensing of mold mixture and gaseous medium in the flask is restricted by the support jack, and mold component desired surface shapes are maintained.

4,553,582

APPARATUS FOR CASTING STEEL IN A CONTINUOUS CASTING MOLD EQUIPPED WITH COMOVING MOLD WALLS

Gerd Artz, Ratingen; Dieter Figge, Essen; Thomas Hoster, Essen, and Jürgen Pötschke, Essen, all of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Oct. 15, 1984, Ser. No. 661,251
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1983, 3337583
Int. Cl.⁴ B22D *11/06*
U.S. Cl. 164—432 **20 Claims**



1. In an apparatus for the continuous casting of steel sheet, particularly to sheet cross sections of a small thickness down to a lower limit of about 30 mm and a width of about 500 to 1500 mm, comprising a continuous caster having comoving mold walls which define a casting cavity and including a pair of oppositely disposed endless casting belts which form the upper and lower walls of said casting cavity and a pair of oppositely disposed endless lateral dams which form the lateral walls of said casting cavity, and a tubular casting nozzle having a mouthpiece which extends symmetrically into said casting cavity and contacts said casting belts forming said upper and lower casting cavity walls to form a seal therebetween; the improvement wherein: the width of said mouthpiece of said casting nozzle at its exit cross section is less than approximately 50% of the width of said casting cavity; and said apparatus further comprises: means for sealing the space in said casting cavity between each of said lateral dams and the adjacent side wall of said mouthpiece of said nozzle, said sealing means including a pair of wheels each having a ceramic outer rim portion, means for mounting each of said wheels for rotation about a respective vertical axis such that said wheels are symmetrically disposed between said mouthpiece and said dams, and each of said wheels has a diameter such that its said rim portion contacts one of said lateral dams and the said adjacent side wall of said mouthpiece and a height such that is upper and lower surfaces contact said upper and lower walls respectively of said casting cavity formed by said endless belts; and means for rotating said wheels.

4,553,583

METHOD OF CONTROLLING TEMPERATURE OF DIE CASTING MOLD

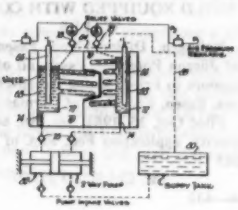
Guido Perrella, Sonneville, Canada, and William E. Thompson, Anderson, Ind., assignors to DBM Industries Limited, Quebec, Canada

Continuation of Ser. No. 361,710, Mar. 25, 1982, abandoned, which is a division of Ser. No. 191,624, Sep. 29, 1980, Pat. No. 4,356,858, which is a division of Ser. No. 929,148, Jul. 31, 1978, Pat. No. 4,248,289. This application May 15, 1984, Ser. No. 610,919

Claims priority, application United Kingdom, Dec. 1, 1977, 501179/77; Canada, Jun. 12, 1978, 305228

Int. Cl.[4] B22D *17/32*

U.S. Cl. 164—458 **7 Claims**



1. A method of controlling the temperature of a mold in a die casting machine having manifold means for retaining cooling water in the mold adjacent the cavities of the mold; inlet and outlet means associated with the manifold means; pressure relief means associated with said outlet means; adjustable regulator means for controlling said pressure relief means; a water supply means for injecting a make-up volume of water into said manifold means comprising a supply line from said supply means; pump means in said line and inlet valve means between said pump and said manifold means; said method comprising:

(a) maintaining the water in said manifold means at a predetermined temperature and pressure by setting of said pressure relief means;

(b) evaporating amounts of said cooling water in the manifold means responsive to heat absorbed from the mold cavity through the walls of said mold, said evaporated water being intermittently released from said manifold means through said pressure relief means in the form of steam;

(c) actuating said pump means to inject into said manifold means a make-up volume of water in an amount sufficient to only replace water volume that has evaporated therefrom in the form of steam.

4,553,584

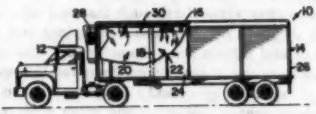
REFRIGERATION/AIR EXCHANGER SYSTEM MAINTAINING TWO DIFFERENT TEMPERATURE COMPARTMENTS

Dayton E. Bloomquist, New Hope, Minn., assignor to Red Owl Stores, Inc., Minneapolis, Minn.

Filed Dec. 7, 1983, Ser. No. 558,932

Int. Cl.[4] F25B *29/00*; B60H *3/00*; F25D *17/08*

U.S. Cl. 165—30 **9 Claims**



1. Apparatus for use with a vehicle having first and second compartments and a main refrigeration unit for maintaining the first compartment at a predetermined temperature below freezing, which comprises:

a duct fluidly interconnecting the first and second compartments, said duct having a first duct portion extending between the first and second compartments and a second duct portion extending only in said second compartment;

the first portion of said duct having a first inlet and outlet both located in said first and second compartments, respectively, and the second portion of said duct having a second inlet and outlet both located in said second compartment;

a divider wall in said duct to isolate the first and second duct portions from fluid communication;

a cooling fan located in said first duct portion between said first inlet and outlet for selectively drawing cold air from said first compartment into said second compartment;

a recirculation fan located in said second duct portion between said second inlet and outlet for continuously recirculating air in said second compartment;

a heating element associated with said recirculation fan in said second duct portion between the second inlet and outlet; and

means including a thermostat and associated temperature sensor for controlling said cooling fan and said heating element to maintain the temperature in said second compartment at a predetermined temperature relatively higher than the temperature in said first compartment.

4,553,585

COOLING ARRANGEMENT FOR INTERNAL COMBUSTION ENGINES WITH COMBINED SEAWATER-FRESH WATER COOLING

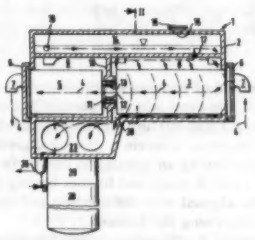
Albert Pfleger, Munich, and Peter Klesel, Dachau, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 22, 1982, Ser. No. 435,922

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1982, 8202493[U]

Int. Cl.[4] F28F *9/00*

U.S. Cl. 165—41 **9 Claims**



4. A cooling arrangement for a liquid-cooled internal combustion engine with combined seawater-fresh water cooling, comprising a first heat exchanger means for seawater-fresh water heat exchange and a second heat exchanger means for seawater-lubricating oil heat exchange, one-piece housing means within which said first and second heat exchanger means are arranged, wherein said first and second heat exchanger means are arranged behind one another in the flow direction of the seawater in respective chambers of the one-piece housing means, said chambers being arranged opposite one another and separated by a partition having an opening through which said first and second heat exchanger means are connected, said one-piece housing means including an inlet duct, a short-circuit duct and a thermostat for fresh water, wherein an additional thermostat and an exchange filter for the lubricating oil are fluidly connected to each other and to said seawater-lubricating oil heat exchanger, provided adjacent to said first and second heat exchanger means to permit the lubri-

cating oil to bypass said seawater-lubricating heat exchanger means, and a storage tank means connected with the inlet duct, the short-circuit duct and the housing chamber for the first heat exchanger means by a narrow venting and volume-balancing opening, the storage tank means having inlet and outlet openings for connection with said venting opening connection and with an inlet and outlet area of the cooling circulation system of the engine, respectively, and wherein said fresh water thermostat is located adjacent to a main portion of said housing means and bypasses fresh water around said seawater-fresh water heat exchanger means from said chamber via said short-circuit duct and said fresh water thermostat to the inlet area of said cooling circulation system of the engine.

4,553,586

MOTOR VEHICLE OIL COOLER

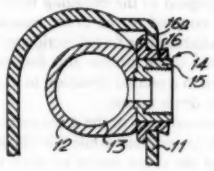
Graham G. Lardner, Llanelli, Wales, assignor to Unipart Group Limited, England

Filed Jun. 15, 1983, Ser. No. 504,493

Claims priority, application United Kingdom, Jun. 19, 1982, 8217836

Int. Cl.⁴ F28F 9/06

U.S. Cl. 165—76 **9 Claims**



1. A heat exchanger including: a header tank shell, a heat exchanger located with the shell, a hollow connector passing through an aperture in a wall of the shell to permit fluid to be passed through the aperture to and from the heat exchanger, an elastomeric bush having a bore, the bush effecting a seal between the hollow connector and the shell wall, the bush including a portion which is located around the hollow connector where it passes through the shell wall, the bore of the elastomeric bush being tapered in its undeformed state from one bore end to the other bore end such that insertion of the connector into the elastomeric bush causes the bush to be expanded into sealing contact with the rim of the aperture in the shell wall, and a retaining member within the shell abutting and restraining the heat exchanger against movement away from the aperture in the shell wall through which the hollow connector passes, the heat exchanger also being located in the shell by an integral web moulded in the shell and opposing said retaining member, the web constraining the heat exchanger against movement in a direction towards the aperture in the shell and also in a direction perpendicular to the said direction.

4,553,587

BACKFLUSH COUPLING AND METHOD FOR INTERNAL COMBUSTION ENGINE COOLING SYSTEM

Paul L. Traylor, 16591 Milliken Ave., Irvine, Calif. 92714

Filed Aug. 15, 1983, Ser. No. 523,371

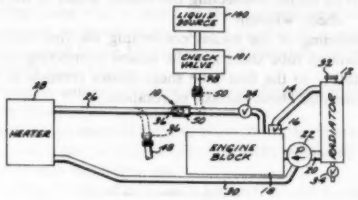
Int. Cl.⁴ F28G 1/12

U.S. Cl. 165—95 **16 Claims**

1. In an internal combustion engine having a cooling system which includes a heater hose, an improved backflush coupling disposed in fluid communication with said heater hose as an integral part thereof during normal operation of said engine and comprising:

a male connector half having an elongated hollow body fixed at its outer extremity in communication with said heater hose and provided at its inner extremity with male threads; and

a female connector half having an elongated hollow body fixed at its outer extremity in communication with said heater hose, the inner extremity of said hollow body of said female connector half including an annular flange having a front seating surface and a rear seating surface, first sealing means disposed between said male and female connector halves to provide a fluid tight seal therebetween, said female connector half further having a union sleeve having an annular wall at one extremity for seating against said rear seating surface, and having female threads at its opposite extremity threadable upon said male



threads whereby said union sleeve may be rotated in one direction to compress said sealing means, against the adjacent end of said male connector thereby to establish a fluid tight connection whereby said backflush coupling may serve as a conduit for coolant in the normal operation of said engine, said union sleeve being rotatable in an opposite direction to enable separation of said male connector half from said femal connector half for attachment of a hose to one of said male and female connector halves to apply fluid to said cooling system, and for use of the other of said male and female connectors as a drain.

4,553,588

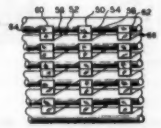
TUBE SUPPORT

Bernhard H. Geissler, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 457,310, Jan. 11, 1983, abandoned. This application Mar. 20, 1985, Ser. No. 714,135

Int. Cl.⁴ F28F 1/32

U.S. Cl. 165—162 **13 Claims**



1. A tube bundle suitable for use in a shell and tube heat exchanger, said tube bundle comprising:

(a) a first tube sheet;

(b) a second tube sheet;

(c) a plurality of parallel tubes extending between the first tube sheet and the second tube sheet arranged to form a first plurality of parallel tube rows and a second plurality of parallel tube rows; and

(d) a plurality of tube support elements extending between the tube sheets with the tube support elements being positioned between adjacent parallel tubes, where each tube support element comprises;

(i) a first member having a first end and a second end and a shape which can be contacted tangentially by a plurality of lines parallel to the plurality of parallel tubes and an axis of rotation between the first end and the second end generally normal to the parallel tubes such that

rotation of the first member around the axis of rotation causes at least two of said lines to spread further apart;

(ii) a first tether attached to the first end of the first member; said first tether extending toward the second tube sheet;

(iii) a second tether attached to the second end of the first member; said second tether extending toward the first tube sheet;

(iv) a means connecting the first tether to the second tube sheet; and

(v) a means connecting the second tether to the first tube sheet; wherein

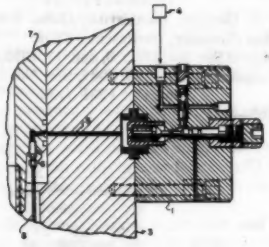
tensioning of the means connecting the first tether to the second tube sheet and the means connecting the second tether to the first tube sheet causes rotation of the first member about the axis of rotation.

4,553,589

FIRE-SAFE SURFACE-CONTROLLED SUBSURFACE SAFETY VALVE CONTROL LINE/WELLHEAD CONNECTOR AND BLOWOUT PREVENTER

Charles E. Jennings; Charles D. Bridges, and Warren D. King, all of Houston, Tex., assignors to Gray Tool Company, Houston, Tex.

Filed Jul. 12, 1984, Ser. No. 630,122
Int. Cl.[4] E21B *34/10, 34/16*
U.S. Cl. 166—53 **2 Claims**



1. A system mounted on or near an oil well to respond to temperatures of a fire to prevent oil well production from reaching the fire at the wellhead, including,

a source of hydraulic fluid pressure connected by a control conduit to a downhole safety valve to maintain the valve open against its spring force,

a first valve of the system connected to control the conduit between the source and the downhole valve,

a second valve of the system connected to control the bleed of the conduit between the source and the downhole valve,

a control piston contacting the first and second valves of the system,

and at least one eutectic body against which the control piston abuts from the force of a spring of the second valve,

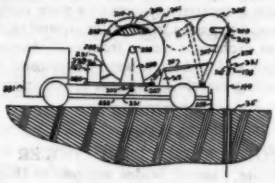
whereby removal of the eutectic body by a predetermined temperature of a fire releases the piston and allows the system pressure to move the piston and thereby close the first valve to isolate the source of fluid pressure to the downhole safety valve and establishes a bleed of the control conduit.

4,553,590

APPARATUS FOR PUMPING SUBTERRANEAN FLUIDS

Edward H. Phillips, Middletown, Calif., assignor to Hidden Valley Associates, Middletown, Calif.

Division of Ser. No. 245,614, Mar. 19, 1981, Pat. No. 4,451,209.
This application Jan. 30, 1984, Ser. No. 575,844
Int. Cl.[4] B66D *1/60, 3/24;* **E21B** *19/02, 43/00*
U.S. Cl. 166—53 **4 Claims**



1. A subterranean pump installation and removal apparatus for a pump suspended in a hole in the earth by a flexible line, the apparatus comprising:

engaging means for engaging the flexible line;

drum means coupled to the engaging means;

motive means coupled to the drum means for causing the drum means to turn in a first direction to wind the flexible line about the drum means and for causing the drum means to turn in a second direction to unwind the flexible line from the drum means;

oscillating means coupled to the drum means for causing the drum means to oscillate while the flexible line is being wound about the drum means to more evenly distribute the flexible line over the surface of the drum means;

a mobile support structure for supporting and transporting the engaging means, the drum means, the motive means and the oscillating means;

support means mounted on the mobile support structure;

pulley means for supporting and guiding the flexible line;

hinge means for supporting the pulley means on the support means and having a hinge axis, the hinge axis being substantially coincident with the axis of the portion of the flexible line between the pulley means and the hole; and

a junction box in which the flexible line is terminated and which comprises an outer casing having first and second curved sides, the radius of curvature of the first side being substantially equal to the radius of curvature of the pulley means and the radius of curvature of the second side being substantially equal to the radius of curvature of the drum means, the drum means having a slot for receiving the junction box.

4,553,591

OIL WELL DRILLING APPARATUS

Richard T. Mitchell, P.O. Box 236, Broussard, La. 70518

Filed Apr. 12, 1984, Ser. No. 599,581
Int. Cl.[4] E21B *33/02*
U.S. Cl. 166—76 **8 Claims**

2. A device for a drilling rig wireline operation, the rig including an annular blowout preventer, comprising:

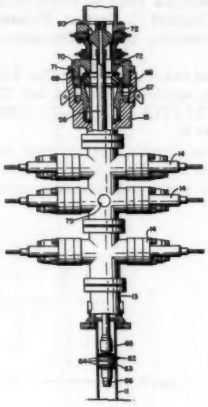
a. an annular spool secured on top of the blowout preventer;

b. a mandrel secured in and sealed to the spool bore, said mandrel having an internal bore of less diameter than the internal diameter of said blowout preventer;

c. a bell nipple superimposed on said annular spool; and

d. a wireline riser sub secured to said mandrel and extending upwardly therefrom to project through the upper bell nipple, said riser sub being of substantially the same internal diameter as the internal bore of said mandrel, the

reduced diameter bore of said mandrel protecting the annular blowout preventer against whipping of a wireline



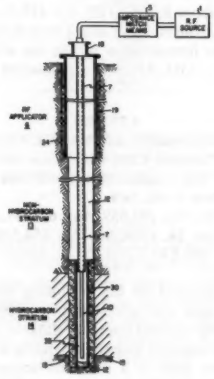
assembly extending through said riser sub and said mandrel.

4,553,592

METHOD OF PROTECTING AN RF APPLICATOR

Mark D. Looney, Missouri City, and Kerry D. Savage, Houston, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 9, 1984, Ser. No. 578,453
Int. Cl.[4] E21B *36/04*
U.S. Cl. 166—248 **19 Claims**



1. A method for protecting an RF applicator during the in situ RF retorting of an oil shale stratum, from a borehole traversing the oil shale stratum comprising the steps of:

lining with a liner at least that portion of the borehole traversing the oil shale stratum with a non-conductive high temperature material of sufficient thickness to protect the RF applicator from expansion of the oil shale stratum, and

cementing said liner in place with a high temperature, non-conductive cementing material.

4,553,593

OIL RECOVERY METHOD

James E. Shaw, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 7, 1984, Ser. No. 618,292
Int. Cl.[4] E21B *43/22*
U.S. Cl. 166—270 **10 Claims**

1. A process for the recovery of oil from an oil bearing subterranean formation penetrated by at least one injection well and at least one production well which comprises forming surfactants in situ comprising the steps of:

(a) injecting a slug of an aqueous alkaline hypochlorite solution through an injection well under conditions to cause oxidation of oil in the formation and product surfactants comprising carboxylates;

(b) injecting an aqueous alkaline alcohol solution to form a carboxylate-alcohol surfactant system,

(c) causing the so-injected slugs to move from the injection well towards one or more production wells displacing oil present in said formation, and

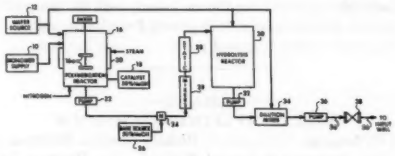
(d) recovering displaced oil from at least one of said production wells.

4,553,594

FLOW CONTROL METHOD

Wayne E. Luetzelschwab, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Division of Ser. No. 361,622, Mar. 25, 1982, Pat. No. 4,510,993.
This application Apr. 8, 1983, Ser. No. 483,149
Int. Cl.[4] E21B *43/22*
U.S. Cl. 166—275 **5 Claims**

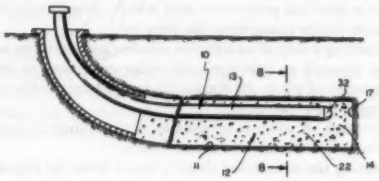


1. A method for controlling the flow of polymer solutions of the type employed as drive fluids and/or mobility control agents in the recovery of oil from subterranean oil-bearing formations to prevent shear degradation of the polymer comprising the solution prior to introducing the polymer solution into an input well of the oil-bearing formation: including the steps of diluting the polymer solution to provide a concentration of the polymer in the solution sufficient to enable the solution to substantially meet the permeability requirements of an oil-bearing subterranean formation, transporting the diluted polymer solution through conduit means having flow control means positioned therein and across which a fluid pressure differential exists in the conduit means, said flow control means being in the form of a needle valve which is movable to a substantially fluid flow limiting position and to a fluid flow open position whereby the flow of the diluted polymer through the conduit means and across the flow control means is selectively regulated, passing the diluted polymer solution at one fluid pressure through said flow control means to effect a lowering of the fluid pressure of the polymer solution while at the same time preventing any shear degradation of the polymer comprising the solution, and conveying the polymer solution through said conduit means to an input well site where it is injected into an oil-bearing formation.

4,553,595
METHOD FOR FORMING A GRAVEL PACKED HORIZONTAL WELL

Wann-Sheng Huang, and Alfred Brown, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 1, 1984, Ser. No. 616,090
Int. Cl.⁴ E21B *43/04*
U.S. Cl. 166—278 **8 Claims**



1. Method for forming a gravel packed, horizontal well completion in a hydrocarbon productive subterranean formation comprised of unconsolidated sand particles which hold a viscous hydrocarbon, whereby to minimize the amount of said sand particles carried from the formation when the hydrocarbon is thermally stimulated and produced, which method includes the steps of;

forming a wellbore into the formation substrate and deviating said wellbore to form a substantially horizontal segment when the bore lies within the productive formation,

depositing a gravel foundation in the horizontal segment of said wellbore to occupy only the lower portion thereof, while leaving the upper portion unoccupied,

longitudinally inserting an elongated well liner along said gravel foundation to be supported by the latter in the unoccupied upper portion of the wellbore, and

depositing a second flow of gravel slurry into the unoccupied upper portion of said wellbore horizontal segment, whereby gravel from the said slurry will fill the wellbore upper portion above said gravel foundation and enclose the liner within a gravel pack.

4,553,596
WELL COMPLETION TECHNIQUE

John W. Graham, Alvin, and A. Richard Sinclair, Houston, both of Tex., assignors to Santrol Products, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 437,431, Oct. 27, 1982, Pat. No. 4,518,039, which is a continuation-in-part of Ser. No. 294,813, Aug. 20, 1981, abandoned. This application Jul. 28, 1983, Ser. No. 518,197
Int. Cl.⁴ E21B *43/116*
U.S. Cl. 166—295 **8 Claims**

1. A method of forming supported perforation tunnels extending from a well bore into a subterranean formation comprising:

placing a suspension of self-consolidating resin coated particles in a completion fluid in the well bore in the interval to be perforated;

positioning a means for forming said perforations in the interval to be perforated;

providing a differential pressure between the well bore and the formation whereby the pressure in said well bore is higher than the pressure in said formation;

firing said perforating means so as to form perforation tunnels extending from said well bore into said formation;

causing said suspension to flow into said perforation tunnel by means of said pressure differential so as to form a packed matrix of self-consolidating resin coated particles in said perforation tunnels; and

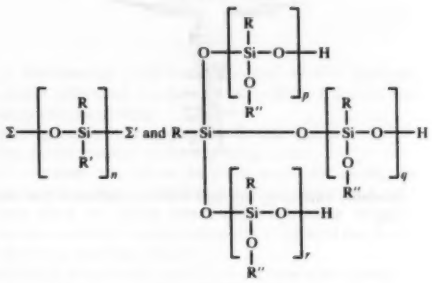
curing said resin coated particles into a consolidated permeable matrix capable of supporting said perforation tunnels.

4,553,597
PROCESS FOR ELIMINATING CLAYS FROM ROCKS AND SEDIMENTARY ENVIRONMENTS

Loïc P. Le Ribault, La Teste de Buch; Jacques P. Donoguès, Talence, and Norbert C. Duffaut, Podensac, all of France, assignors to Lamothe, Boulan, Dunogues, Duffaut, and Ribault, France

Filed Jul. 21, 1983, Ser. No. 515,603
Claims priority, application France, Jul. 21, 1982, 82 12856
Int. Cl.⁴ E21B *43/22, 43/27;* C09K *3/00*
U.S. Cl. 166—305 R **5 Claims**

1. A process for eliminating clays from rocks and sedimentary environments comprising applying into said sedimentary environments or rocks organo-silicon compounds selected from:



wherein:

n is a whole number between 1 and 1,000;

p, q and r are whole numbers between 0 and 1,000;

R and R' are selected from the group consisting of aliphatics, cycloaliphatics, olefinics, aromatics; heteroatom-containing aliphatics, cycloaliphatics, olefinics and aromatics; and combinations of the above;

R can also be OH, OR and $OSiR_3$;

Σ is selected from R, H, and SiR_3;

Σ' is selected from R, OR, OH, and $OSiR_3$; and

R'' is selected from R, R', Σ and a di or trifunctional polysiloxane chain formation in which the silicon substituents are R, OH or OM, M being a potassium atom.

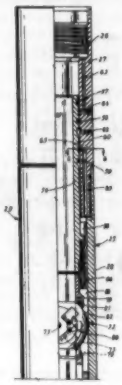
4,553,598
FULL BORE SAMPLER VALVE APPARATUS

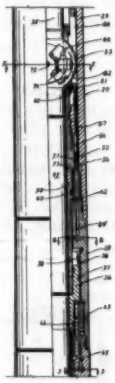
Dale E. Meek, Missouri City, and James M. Upchurch, Stafford, both of Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 290,659, Aug. 6, 1981,. This application Sep. 24, 1984, Ser. No. 654,516
Int. Cl.⁴ E21B *43/12, 42/00*
U.S. Cl. 166—317 **13 Claims**

1. Apparatus adapted for use in closing the bore of a pipe string during a well testing operation comprising: a housing having an actuator mandrel assembly slidably disposed therein, said housing and mandrel assembly defining a passage for the flow of formation fluid in a direction therethrough; axially spaced full-opening valve means mounted on said mandrel assembly for opening said flow passage in one longitudinal position of said mandrel assembly within said housing and for closing said flow passage in another longitudinal position therein; hydraulically operable means on said mandrel assembly for shifting said mandrel assembly from said one position to said other position, said hydraulically operable means being normally subject to balanced atmospheric or other low pressures and normally not subject to the pressure of fluids in the well annulus surrounding said housing; and means responsive to a predetermined well annulus pressure for subjecting said

hydraulically operable means to well annulus pressure to cause shifting of said mandrel assembly in the direction of the flow of said formation fluid to said other position and closure of said





flow passage by said valve means, a region of said flow passage located between said valve means defining a sample chamber adapted to trap a flowing sample of formation fluids.

4,553,599

CONTROL APPARATUS FOR OIL WELL PRODUCTION STRING CLOSING TOOL

Bernard J. Glotin, Saint Maur, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Jul. 6, 1982, Ser. No. 395,447

Claims priority, application France, Jul. 8, 1981, 81 13810

Int. Cl.⁴ E21B *34/14*

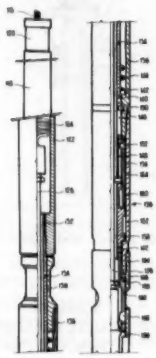
U.S. Cl. 166—332 **9 Claims**

1. Control apparatus for a tool placed in the production string of a well, said apparatus being capable of being lowered into the well at the end of a cable, comprising:

a first mechanism for transforming a longitudinal reciprocating movement into an alternating rotary movement, the longitudinal reciprocating movement being obtained by pulling on and releasing said cable; and a second mechaniam made up of a roller-type clutch connected with the first mechanism for transforming said alternating rotary movement into a one-directional rotary movement;

said first mechanism comprising a rod sliding along the longitudinal axis of the apparatus under the action of pulling forces exerted on the cable, said sliding rod having a groove of helical form;

said second mechanism comprising a drive shaft equipped with a tenon engaging in said groove so that the drive shaft describes an alternating rotary movement when said rod moves longitudinally in a to-and-fro movement, and driven shaft having slots and rollers placed in said slots, said shafts and rollers forming said clutch so that said driven shaft is imparted only a one-directional rotary movement;



said driven shaft comprising a first bearing surface equipped with a first hollow; and said apparatus including an actuator mobile longitudinally between a first and a second postion, connected with a element of the tool to be controlled and having a part kept against said bearing surface, said part engaging in said hollow for a given angular position of said driven shaft in relation to said actuator, thereby causing said actuator to go from the first to the second position.

4,553,600

SAFETY INSTALLATION FOR A SUBMERGED DRILLING WELL-HEAD

Georges Vigouroux, Carrieres; Gilbert Fort, Paris, and Louis Soleille, Les Clayes-sous-bois, all of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed Jan. 19, 1984, Ser. No. 572,047

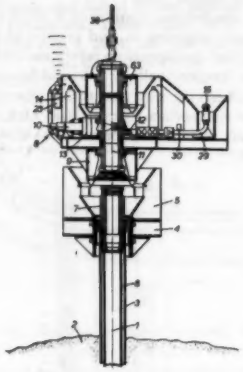
Claims priority, application France, Jan. 26, 1983, 83 01142

Int. Cl.⁴ E21B *29/08, 43/01*

U.S. Cl. 166—343 **6 Claims**

1. A safety installation for a submerged wellhead incorporating at least one well shut-off unit (**60**) located above a tubing receptacle (**7**), said safety installation comprising an emergency unit (**8**) comprising a well shut-off means (**10**), an injection pipe (**12**) for opening into the well-head between the well shut-off unit and the tubing receptacle, a lateral fluid inflow (**15**) for an intervention fluid for said well shut-off means and for said injection pipe, and means (**29, 37, 36**) connecting said lateral fluid inflow to said injection pipe, a re-entry structure (**39**) disposed on the sea bottom (**2**) at a horizontal distance from said well-head and provided with a first inflow funnel (**41**) for receiving externally an intervention fluid supply fitting (**64**), and a flexible pipe (**47**) having a first end and a second end and for connection by its said first end to said first inflow funnel and by its said second end to said lateral fluid inflow, whereby upon the failure of the shut-off unit flowing a blowout, inter-

vention fluid may be supplied to the re-entry structure from a surface location horizontally removed from the well-head to



actuate the shut-off means and inject the well-head via the pipe.

4,553,601

METHOD FOR FRACTURING SUBTERRANEAN FORMATIONS

Stephen W. Almond, Ventura, Calif., and Michael W. Conway, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Sep. 26, 1984, Ser. No. 654,823
Int. Cl.[4] E21B *43/267*
U.S. Cl. 166—308 **17 Claims**

1. A method for fracturing a subterranean formation comprising:

preparing a fracturing fluid by admixing an aqueous liquid, a gelling agent comprising a cellulose ether which is chemically modified to incorporate pendent vicinal dihydroxy groups in an amount sufficient to provide a DS of about 0.3 to about 1.3 and exhibits shear-thermal stability at a temperature in excess of 200° F., said gelling agent being present in an amount in excess of about 0.2 percent by weight of said aqueous liquid and a crosslinking agent present in an amount of at least about 0.001 percent by weight of said aqueous liquid; and

introducing said fracturing fluid into a subterranean formation at a rate and pressure sufficient to fracture said formation.

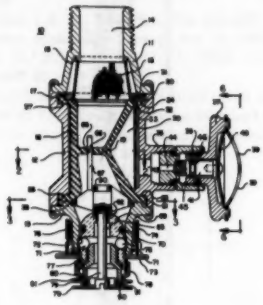
4,553,602

AUTOMATIC ON-OFF SPRINKLER HEAD

George S. Pieczykolan, c/o Central Sprinkler Corp., Fourth St. and Cannon Ave., Lansdale, Pa. 19446

Continuation-in-part of Ser. No. 289,451, Aug. 3, 1981, abandoned, which is a continuation-in-part of Ser. No. 250,097, Apr. 11, 1981, abandoned. This application Jan. 5, 1983, Ser. No. 455,860
Int. Cl.[4] A62C *37/20*
U.S. Cl. 169—19 **6 Claims**

1. A sprinkler head for automatic sprinkler systems comprising a housing having a fluid inlet and a fluid outlet communicating with a chamber therebetween, a fluid responsive valve member within said chamber and biased to a closed position by fluid pressure from said inlet, a downstream surface of said valve member being in fluid communication with said outlet, means for equalizing fluid pressure upstream and downstream of said valve member, valve means movably supported by said housing for controlling flow through said outlet, a first temperature responsive controller, said temperature responsive controller being connected to said movable valve means whereby the movable valve means moves to an open position when said temperature controller senses a predetermined temperature, said movable valve means supporting a fluid deflector and said temperature responsive controller for movement therewith, and a pilot valve for relieving the effective inlet pressure on a



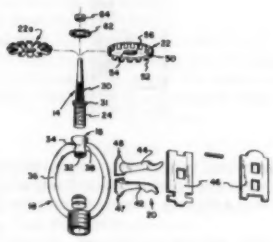
surface of said valve member to permit discharge through said outlet when said valve means is in its open position, said pilot valve being responsive to a second temperature responsive controller, said second temperature responsive controller being responsive to a higher temperature than said first temperature responsive controller.

4,553,603

REPLACEABLE DEFLECTORS FOR THE SPRINKLER HEADS OF AUTOMATIC FIRE EXTINGUISHING SYSTEMS

John J. Dwyer, 22 Grove Ave., Randolph, Mass. 02368

Continuation-in-part of Ser. No. 447,534, Feb. 24, 1983, abandoned. This application Dec. 24, 1984, Ser. No. 685,956
Int. Cl.[4] A62C *37/08*
U.S. Cl. 169—38 **2 Claims**



1. A sprinler head of the automatic type comprising a body portion, a nozzle, a thermally responsive element, a pintle, a seal element, a connector and a deflector,

the thermally responsive element having a first thermal end and a second terminal end spaced from the first terminal end,

the deflector removeably attached to the pintle,

the connector engaged to the body portion and the pintle engaged to the body portion through the connector and with the first terminal end of the thermally responsive element,

the seal element positioned with the nozzle and engaged by the second terminal end of the thermally responsive element,

the connector including an internally threaded axial bore,

and the pintle having a first externally, threaded end, a second end, a free end and a center portion, the center

portion includes a threaded portion and an unthreaded engagement portion, an annular shoulder portion extending from the junction of the first end and the engagement portion in right angle relationship to the longitudinal axis of the pintle, the shoulder portion having a greater diameter than the engagement portion, the free end threaded into the axial bore of the connector and the deflector attached to the externally threaded center portion of the pintle by a nut and the shoulder portion positioned between the deflector and the connector.

4,553,604

METHOD OF CONTROLLING CONTINUOUS CASTING EQUIPMENT

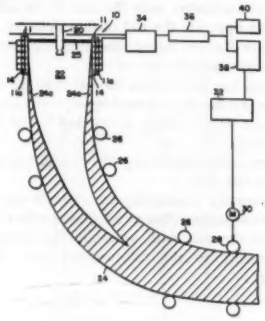
Motoyasu Yaji; Masuto Shimizu; Hiromitsu Yamanaka, and Takao Koshikawa, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Aug. 31, 1983, Ser. No. 537,403

Claims priority, application Japan, Feb. 24, 1982, 57-29237; Feb. 26, 1982, 57-31024; Feb. 26, 1982, 57-31025; Feb. 26, 1982, 57-31026; Feb. 26, 1982, 57-31027

Int. Cl.[4] B22D *11/16*

U.S. Cl. 164—453 **11 Claims**



1. A method of controlling continuous casting equipment, comprising the steps of:

providing a heat flux meter on an outer surface of a side shell plate of a mold;

measuring a local heat flux waveform commensurate to a local extracted heat value of said mold with said heat fux meter;

detecting an abnormality of said local heat flux waveform; and

adjusting the operation of said equipment responsive to said detection of an abnormality.

4,553,605

WORK-VEHICLE WITH ROLLING-CONTROL MECHANISM

Yoshiyuki Katayama, Osaka, and Tetsuya Nishida, Kawachinagano, both of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed May 11, 1983, Ser. No. 493,473

Claims priority, application Japan, Jul. 16, 1982, 57-124565

Int. Cl.[4] A01B *63/10*

U.S. Cl. 172—2 **21 Claims**

1. A work vehicle which comprises

a vehicle body,

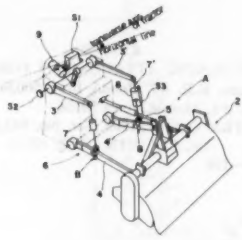
a ground engaging implement adjustably connected to said vehicle body by a three point link mechanism,

said three point link mechanism including lower links connected to said body and said ground engaging implement, said lower links being adjustable in width therebetween where they attach to said implement, lift arms and lift rods connected between said lift arms and said lower links and adjustable in a vertical direction for lifting said ground engaging implement,

a first sensor means (S1) on said vehicle body for detecting a right-and-left slant and a slant angle θ of said vehicle body,

a rolling control mechanism,

said rolling control mechanism adapted to adjust said



ground engaging implement relative to ground by adjusting one of said lift rods in response to said slant angle θ, and

said rolling control mechanism comprises means for shifting a control gain corresponding to said slant angle θ detected by said first sensor means (S1) to a different gain in response to adjustment of said lower links to a different width with respect to said ground engaging implement.

4,553,606

SOD CUTTING MACHINE HAVING SPLIT UNDERCUTTING BLADE

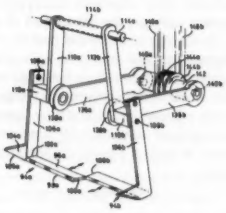
William T. Arnold, Sutton West, Canada, assignor to Brouwer Turf Equipment Limited, Keswick, Canada

Filed Nov. 4, 1982, Ser. No. 439,254

Claims priority, application Canada, Jan. 25, 1982, 394835

Int. Cl.[4] A01B *45/04*

U.S. Cl. 172—19 **7 Claims**



1. A machine for cutting a thin strip of sod, said machine having:

(a) a frame adapted for travel forwardly along a path of travel,

(b) first and second cutting knives,

(c) each cutting knife having an elongated undercutting blade having a sharpened forward edge, an upper surface, a lower surface, and inner and outer ends, and a side cutting blade connected to said outer end and extending substantially at right angles thereto, said side cutting blade also having a sharpened forward edge,

(d) means mounting said knives on said frame for reciprocation of said knives back and forth along said path of travel from a position in which said undercutting blades are aligned transversely and in a common substantially horizontal plane with said inner ends substantially touching each other and with said upper surfaces aligned horizontally with each other and with said lower surfaces aligned

horizontally with each other and with said side cutting blades extending upwardly from said undercutting blades so that said undercutting and side cutting blades effectively form a single knife for undercutting and cutting the edges of a strip,

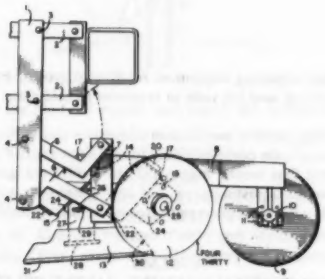
(e) and drive means connected between said frame and said mounting means (d) for reciprocating said knives in opposite directions, whereby to reduce vibration of said machine.

4,553,607

RIDGE CLEANING ATTACHMENT FOR PLANTERS

Ernest E. Behn, R.R. #1, Boone, Iowa 50036, and Jerome L. Behn, R.R. #1, Madrid, Iowa 50156

Filed Oct. 17, 1983, Ser. No. 542,534
Int. Cl.[4] A01B *39/08, 39/14*
U.S. Cl. 172—156 **6 Claims**



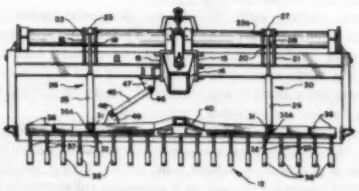
1. An attachment for a planter designed to plant on level ground to adapt the planter to plant along ridges, said planter including a transversely extending tool bar having at least one planter unit secured thereto by laterally spaced upper and lower arms arranged in a parallelogram type linkage, said attachment comprising a pair of laterally spaced vertically extending mounting bars each having spaced apart openings to align with and pivotally attach to the upper and lower arms of the parallelogram linkage, the lower end of each said mounting bar pivotally mounting a rearward end of a forwardly extending parallelogram linkage comprising a plurality of arms attached at their forward ends to a vertical outer frame portion of a generally horizontally extending main frame, said main frame including a forward centrally mounted gauge wheel, a pair of forwardly and downwardly converging discs aligned with said gauge wheel, a sweep mounted behind and aligned with said discs.

4,553,608

SCRAPER WITH RIPPER ASSEMBLY

Richard B. Miskin, P.O. Box 218, Ucon, Id. 83454

Filed Feb. 16, 1984, Ser. No. 580,678
Int. Cl.[4] A01B *49/02;* **E02F** *3/85*
U.S. Cl. 172—197 **1 Claim**



1. A scrapper with a ripper assembly comprising

a wheeled scraper unit including a main tongue for pulling by a prime mover, said scraper unit having an elevated top rail movable up and down with a cutting edge of the scraper

a ripper assembly comprising a support bar and spaced apart ripper teeth spaced along the support bar and extending downwardly therefrom said support bar being positioned generally beneath the top rail;

hydraulic cylinder means interconnecting the top rail and the support bar through universal joint means that will raise and lower the ripper assembly relative to the scraper unit, said hydraulic cylinder means comprising

a pair of spaced apart hydraulic cylinders, each said cylinder having a rod thereof pivotally connected by a ball journal to the top rail and a housing thereof pivotally connected to the support bar, and means to selectively supply fluid to and to exhaust fluid from the hydraulic cylinders, said means comprising

a pump,

a fluid storage reservoir,

a valve means supplying fluid from the reservoir through the pump to the valve,

a hydraulic line having a pressure relief valve therein interconnecting the end of one hydraulic cylinder opposite the rod of the cylinder,

a hydraulic line interconnecting the other end of the one hydraulic cylinder with the end of the other hydraulic cylinder opposite the rod of that cylinder, a line with a restrictor therein interconnecting the other end of the other cylinder and the valve,

a hydraulic line connecting the valve to the reservoir, and

a ripper tongue having one end fixed to the support bar and an opposite end pivotally connected to the main tongue;

a guide arm;

means pivotally connecting one end of said guide arm to the top rail; and

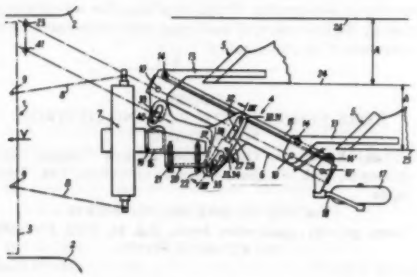
means pivotally connecting an opposite end of the guide arm to the support bar at a location offset from directly beneath the one end, whereby the guide arm pivots transversely to the longitudinal axis of the ripper tongue.

4,553,609

GANG PLOW OF VARIBLE WORKING WIDTH

Henri E. Salva, Croix, France, assignor to J. I. Case Company, Racine, Wis.

Filed Jul. 27, 1983, Ser. No. 517,549
Int. Cl.[4] A01B *65/02, 69/00*
U.S. Cl. 172—647 **8 Claims**



1. A gang plow of the type having a plurality of plow bottom support brackets each rigidly fixed to one plow bottom and uniformly mounted along a plow beam about vertical axes, a coupling member pivotally attached to the plow bottom support brackets and defining with the plow beam deformable parallelograms, and a forecarriage unit adapted to be carried by the link arms of a tractor hitch wherein the improvement

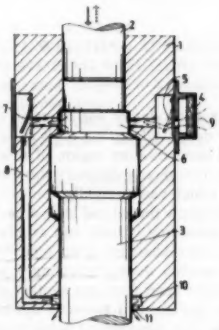
comprises said plow beam being movable relative to said forecarriage unit such that it pivots about a first vertical axis fixed relative to said forecarriage unit, control means connected to said plow beam and said forecarriage unit for pivoting said plow beam about said first vertical axis to thus vary the angle formed by said plow beam and the direction of forward travel of the tractor, the position of said first fixed vertical axis being located forward of the articulation of the first support bracket along a line parallel to the direction of forward travel whereby pivoting of said plow beam about said first fixed axis causes a variation of the cutting width between the plow bottoms of a certain value and at the same time a transverse displacement of said certain value of the first plow bottom in the appropriate direction.

4,553,610

HYDRAULIC STRIKING MACHINE

Raimo K. Pelto-Huikko, Helsinki; Esko A. O. Åhlman, and Pertti V. Rautimo, both of Salpakangas, all of Finland, assignors to Kone Oy, Helsinki, Finland

Continuation of Ser. No. 179,658, Aug. 20, 1980, abandoned. This application Mar. 13, 1984, Ser. No. 588,947
Claims priority, application Finland, Aug. 21, 1979, 792591
Int. Cl.[4] E21B *7/00*
U.S. Cl. 173—1 **7 Claims**



1. A method for operating a hydraulic-actuated striking machine comprising a body part and a hydraulically operated piston moving to and for in the body, with said piston being accelerated to strike intermittently against a tool, wherein the improvement comprises:

(a) passing a current of air directly from the atmosphere through a filter then through an inlet check valve into an impact compression space located between the piston and the tool to provide an intermittent puffing air current; and

(b) leading the air current from said impact compression space through an outlet check valve and then uniformly along the outer surface of said tool to clean the tool.

4,553,611

PRESSURE DROP REGULATOR FOR DOWNHOLE TURBINE

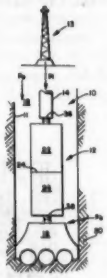
William C. Lyons, P.O. Box 2457, Santa Fe, N. Mex. 87504-2457

Filed Apr. 20, 1984, Ser. No. 602,396
Int. Cl.[4] F03B *13/02*; E21B *4/02*
U.S. Cl. 175—71 **11 Claims**

1. Method of drilling a borehole with a downhole pneumatically actuated motor supported by a pipe string wherein a drill bit is connected to be rotated by the pneumatic motor and the motor is located downhole adjacent to the bit, with gas flowing down the pipe string to the motor, and spent gas flowing up the borehole annulus, comprising the steps of:

(1) providing a first pressure differential between the motor inlet and the source of air pressure to cause sonic or subsonic flow to occur to the motor;

(2) providing a second pressure differential between the air motor outlet and the drill bit outlet to cause sonic flow to occur into the annulus;



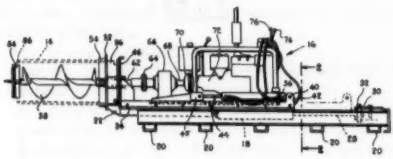
(3) whereby; the pressure drop across the motor is substantially constant so long as the critical pressure at the drill bit outlet is not exceeded.

4,553,612

EARTH BORING MACHINE

Marion E. Durham, 10 Curtis Rd., Greenville, S.C. 29611

Filed Nov. 9, 1983, Ser. No. 549,876
Int. Cl.[4] E21B *7/20*
U.S. Cl. 175—122 **5 Claims**



1. An earth boring machine for boring straight and level elongated holes through rock-laden earth and inserting lengths of pipe in said bored hole comprising:

a stationary horizontally extending frame;

a first slide carried on said stationary elongated frame;

a second slide carried on said first slide;

an elongated auger guiding sleeve carried adjacent one end of said first slide, said guiding sleeve having a cutting edge on a remote end thereof, said guiding sleeve being a length of tubular pipe to be inserted in a bored hole;

a power-driven auger assembly carried on said second slide, said power-driven auger including an elongated auger carried within said guiding sleeve;

a cutting tool carried on the end of said auger adjacent a remote end of said length of pipe;

means for advancing said first slide driving said cutting edge of said guiding sleeve into said earth while said power-driven auger removes said earth as said guiding sleeve is advanced into a bored hole in said earth,

means for retracting said first slide after said guiding sleeve has been advanced and inserted in said bored hole for attaching another length of pipe to said previously inserted length of pipe and to said one end of said first slide, and

means for advancing said second slide on said first slide advancing said cutting tool out beyond said remote end of said guiding sleeve for cutting through obstructions in the earth.

4,553,613

HYDRAULIC LIFT INNER BARREL IN A DRILL STRING CORING TOOL

Steven R. Radford, West Jordan, Utah, assignor to Norton Christensen, Inc., Salt Lake City, Utah

Filed Sep. 9, 1983, Ser. No. 530,492
Int. Cl.[4] E21B *25/10*
U.S. Cl. 175—250 18 Claims

1. An apparatus for hydraulically lifting an inner tube concentrically disposed within an outer tube in a drill string comprising:

first means for selectively and automatically diverting hydraulic flow within said outer tube;

second means for providing longitudinal upward displacement of said inner tube in response to said selectively diverted hydraulic flow, said first means selectively diverting hydraulic flow to said second means and said second means being coupled to said inner tube wherein said inner tube is longitudinally displaced upward by said second means; and

third means for selectively locking said second means in a fixed position with respect to said outer tube, said third means also being selectively provided with hydraulic flow by said first means, said third means for automatically unlocking said second means after a first predetermined magnitude of hydraulic pressure has been supplied to said second and third means, said second means then longitudinally displacing said inner tube upward with respect to said outer tube by a predetermined distance, said first means then for selectively and automatically rediverting said hydraulic flow when a second predetermined magnitude of said pressure is achieved, said third means then locking said second means with respect to said outer tube in a second relative configuration thereto,

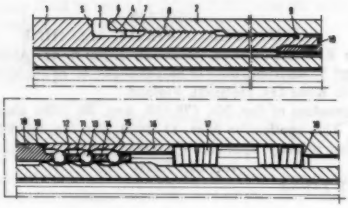
whereby said inner and outer tube may be selectively longitudinally displaced with respect to each other in an automatic fashion by activation of said first means.

4,553,614

COMPENSATION DEVICE FOR INSERTION IN A DRILL STRING FOR DEEP-WELL DRILLING TOOLS

Rainer Jürgens, Celle-Osterloh, and Thomas Jüng, Isernhagen, both of Fed. Rep. of Germany, assignors to Norton Christensen, Inc., Salt Lake City, Utah

Filed Mar. 2, 1984, Ser. No. 585,812
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1983, 3308441
Int. Cl.[4] E21B *4/06, 17/043*
U.S. Cl. 175—302 5 Claims



1. A compensation device for insertion in and adjusting a drill string for deep-well drilling tools axially within a whole predetermined compensating region of axial length, the drill string having a transversely divided outer pipe, including outer pipe members which can be rigidly connected to one another by a cylindrical screw thread and have adjacent faces as external stop faces extending radially and axially opposite one another adjacent outer diameters of the pipe members and which approach one another during screwing together of the pipe members and move apart from one another during unscrewing and an annular gap formed between different inner smaller diameters of the pipe members adjacent to and extending axially from the faces, the compensation device comprising a spacing member composed of segments each having an outer compensating region of predetermined axial length between axially opposite sides extending radially adjacent its outer diameter, situated axially opposite and engageable by the faces and an inner axially projecting collar insertable into the annular gap and which segments can upon partial unscrewing of the pipe members, be inserted radially from outside and located between the faces of the pipe members and joined together to form a ring between the faces and a collar retained in the annular gap by tightening the pipe members and that the screw thread has a length of engagement which is increased by the axial length of the whole predetermined compensating region and the collar.

4,553,615

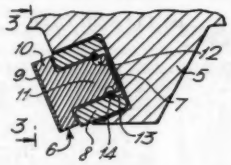
ROTARY DRILLING BITS

Alfred J. Grainger, Longlevens, England, assignor to NL Industries, Inc., New York, N.Y.

Filed Feb. 17, 1983, Ser. No. 467,672
Claims priority, application United Kingdom, Feb. 20, 1982, 8205073
Int. Cl.[4] E21B *10/52, 10/56*
U.S. Cl. 175—329 13 Claims

1. A rotary drilling bit, for drilling, from the surface, deep holes in sub-surface formations, comprising a bit body with a face and a shank having a bore for the passage of drilling fluid to the face of the bit, the diameter of the body of the bit exceeding 100 mm, and a plurality of rotatable cutting elements, each

of said cutting elements being in the form of a disc having a cutting face comprising an agglomerate of diamond particles in the form of a thin flat layer, bonded to a thicker backing layer of cemented tungsten carbide, each disc having a cylindrical spindle extending from the backing layer and rotatably mounted in a hole in an element set in the body of the bit, the



axis of rotation of the spindle extending perpendicularly to the cutting face of the cutting element, said spindle, in a direction away from the cutting face, being inclined rearwardly with respect to the direction of rotation of the bit and in a direction away from the surface of the formation being cut by said cutting element, said cutting elements being free to rotate in use of the bit.

4,553,616

COMBINATORIAL WEIGHING APPARATUS HAVING MEMORY FOR STORING WEIGHING CONDITIONS

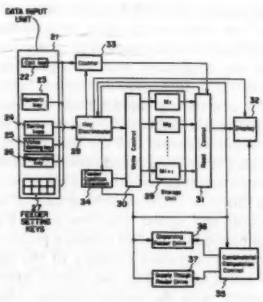
Setsuo Haze, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Aug. 12, 1983, Ser. No. 522,566

Claims priority, application Japan, Aug. 13, 1982, 57-123283[U]

Int. Cl.⁴ G01G *19/34*

U.S. Cl. 177—1 **7 Claims**



7. A combinatorial weighing method for use with a plurality of weighed batches of articles which are fed to hoppers by feeders, comprising the steps of:

(a) entering, as plural sets of reserved values, sets of weighing conditions necessary for different types of combinatorial weighing, said step (a) including entering, for each of the sets of reserved values, a target weight value, upper and lower limit values for defining preset allowable limits for the combinatorial weighing, and values indicative of the amplitude and duration of feeder vibration;

(b) storing the plural sets of reserved values in respective memories;

(c) reading a selected one of the plural sets of reserved values from the corresponding one of the memories in accordance with the type of combinatorial weighing which is to take place; and

(d) controlling combinatorial computation and the feeding of articles to the hoppers in dependence upon the set of weighing conditions specified by the selected set of reserved values.

4,553,617

ARTICLE DISCHARGE APPARATUS IN AUTOMATIC WEIGHING SYSTEM

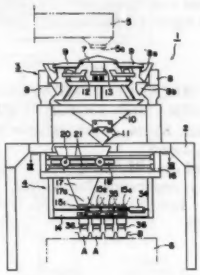
Takashi Tatematsu, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Jul. 1, 1983, Ser. No. 510,097

Claims priority, application Japan, Jul. 6, 1982, 57-102649[U]

Int. Cl.⁴ G01G *19/22, 13/16;* **B65B** *1/04;* **B67D** *3/00*

U.S. Cl. 177—25 **11 Claims**



1. An apparatus for discharging weighed articles from an automatic weighing system into a plurality of containers, the automatic weighing system being of the type in which a weighing unit weighs and then discharges articles from a collecting chute having a discharge port at the conclusion of each weighing cycle, comprising:

a base having a longitudinal axis;

a plurality of timing hoppers disposed on said base above respective ones of the containers;

a movable chute, transportable along said longitudinal axis of said base, for successively introducing weighed articles, discharged from the collecting chute, into each of said timing hoppers; and

means, provided on said base, for opening all of said timing hoppers in unison when all of said timing hoppers are provided with articles by said movable chute.

4,553,618

WEIGHING CELL

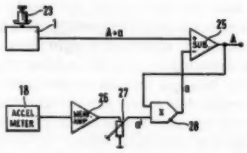
Karl-Heinz Kusmenskji, and Harald Beck, both of Pohlheim, Fed. Rep. of Germany, assignors to Mettler-Waagen GmbH, Giessen, Fed. Rep. of Germany

Filed Aug. 11, 1983, Ser. No. 522,435

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1982, 3230998

Int. Cl.⁴ G01G *23/10, 7/00*

U.S. Cl. 177—185 **6 Claims**



1. A weighing cell, in which the weight forces of the load are compensated by deformation or electromechanical forces, including a load carrier which receives the load, a mechanical-

electrical load-measuring cell, an acceleration meter which experiences the same vertical accelerations as the weighing cell, wherein the load cell and the acceleration meter are connected electrically with one another such that the measuring signal which is adulterated by the acceleration action is corrected correspondingly, including the improvement comprised in that the load cell has an output signal (A+a) comprising a weighing signal (A) superposed by a spurious signal (a) due to said acceleration, a subtractor receiving said output signal (A+a), means for balancing the output signal of the acceleration meter to a value (a'), a multiplier receiving said balanced signal (a'), the multiplier also receiving from the subtractor a weighing signal (A) from which said spurious signal (a) has been cleaned, said multiplier producing a signal corresponding to said spurious signal (a) and feeding it to the subtractor.

4,553,619

ELECTRONIC BALANCE WITH AVERAGING FEATURE FOR VIBRATION ERROR CORRECTION

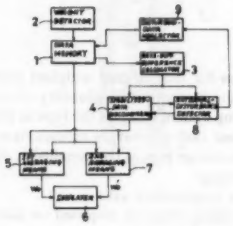
Yasuhiro Fujinaga, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Jun. 21, 1984, Ser. No. 622,834

Claims priority, application Japan, Jun. 30, 1983, 58-120005

Int. Cl.⁴ G01G *23/10, 9/00*

U.S. Cl. 177—185 **2 Claims**



1. An electronic balance comprising:

a data memory for storing the weight data sampled at predetermined time intervals from the output of the weight detecting means provided in said electronic balance;

a data difference calculating means for calculating the differences between a newest weight data d_0 and the data d_n, d_{n-1}, . . . , d_1 of a predetermined number n continually preceding to said newest weight data d_0;

a data stabilization judging means for judging the n+1 data d_n, d_{n-1}, . . . , d_1 to be stabilized, if an equation $|d_j - d_0| \leqq R\sqrt{n+1}$ is satisfied, where R is the sensitivity of said electronic balance and j stands for 1, 2, . . . , n;

a first data-averaging means for calculating, when said n+1 weight data are not judged to be stabilized, an average W_0 over said n+1 weight data;

a second data-averaging means for calculating, when said n+1 weight data are judged to be stabilized, an average W_0' with the basis data for averaging increased one by one at each time a new weight data d_0 is sampled;

an external-disturbance judging means for judging, if a new weight data d_0 which does not satisfy said equation is sampled after the preceding weight data have been judged to be stabilized, said new weight data to be due to an external disturbance, and for judging the weight data to have been brought into an unstabilized state, so long as such a weight data as said new weight data which does not satisfy said equation is successively sampled;

a disturbed-data disposing means for displacing, when a weight data is judged to be due to an external disturbance, with the average W_0' calculated when the weight data just preceding to said weight data judged to be due to an external disturbance was sampled; and

a displaying means for displaying said W_0 or said W_0'.

4,553,620

VEHICLES WITH DIFFERENTIAL SPEED STEERING

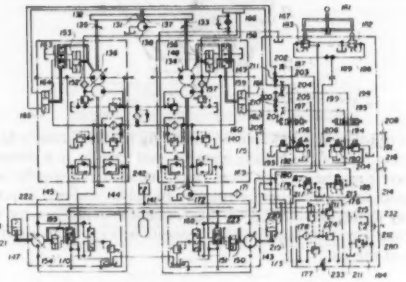
Erich Eckhardt, Grossumstadt; Karl Schmitt, Sailauf; Wolfgang Grone, Aschaffenburg, and Binio Binev, Sulzbach/Main, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Nov. 10, 1983, Ser. No. 550,260

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1983, 3241793

Int. Cl.⁴ B62D *11/04*

U.S. Cl. 180—6.48 **24 Claims**



2. In a control for the drive of a vehicle with differential speed steering and with a hydrostatic transmission for the drive of the drive wheels of each side of the vehicle, a final control element of each of the two transmissions connected with a spring-loaded servo piston capable of sliding in an operating cylinder for moving the final control element to control the direction and speed of each of said transmissions, a pressure chamber provided on each side of the servo piston in the operating cylinder, the servo piston acted upon by a selectively adjustable control pressure, at least one control pressure pick-off assigned for controlling the forward and backward travel and selectively connected with the operating cylinders of the transmission of the two vehicle sides, two additional control pressure pick-offs, each one assigned to one direction of turning and selectively connected with the operating cylinder of the drive unit of the vehicle side on the inside of a turn, each servo piston for controlling the direction and speed of travel being acted upon on the one side by the control pressure pick-off assigned to this control, and for controlling the turning radius on the other side, being acted upon by a control pressure pick-off of the pair assigned to turning, a pilot valve selectively controlled as a function of the switching state of an selectively actuable direction and speed selection lever located in the connection line between a control pressure pick-off assigned to the turning and the operating cylinder of the assigned drive unit, said pilot valve connecting this control pressure pick-off assigned to turning with the second pressure chamber of the operating cylinder of the drive unit on the inside of the turn, the second pressure chamber of which is acted upon by the control pressure pick-off determining the control pressure of travel speed and direction, the control pressure pick-off assigned to one direction of turning of the control pressure pick-off pair determining the direction and radius of turning being a control pressure pick-off that with slight actuation first reduces the control pressure in the pressure chamber of the operating cylinder acted upon by the control pressure pick-off determining the direction and speed of travel and furnishes a control pressure only with greater actuation on the opposite side of the servo piston and is connected at least with its pressure-building section for supplying pressure to the outlet of the control pressure pick-off determining the travel speed, the improvement wherein the control pressure pick-off section that reduces the control pressure of each control pressure pick-off assigned to a turning direction is a control pressure reducing valve that reduces the pressure with prescribed characteristics following a preselected movement of said valve without pressure change

and independently of the magnitude of the incoming pressure with respect to the control pressure pick-off that controls travel.

4,553,621

AUTOMOBILE SPEED CONTROL SYSTEM

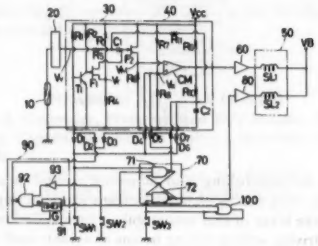
Hitoshi Hyodo, Okazaki; Naoji Sakakibara, Chiryu, and Shoji Kawata, Okazaki, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Okazaki, Japan

Filed Sep. 21, 1983, Ser. No. 534,463

Claims priority, application Japan, Sep. 21, 1982, 57-165274; Sep. 21, 1982, 57-165275; Sep. 21, 1982, 57-165277

Int. Cl.⁴ B60K *31/00*

U.S. Cl. 180—179 **4 Claims**



1. An automobile speed control system comprising:

a comparator circuit for issuing a speed difference signal when there is a difference between an automobile speed signal indicative of an actual automobile speed and an automobile speed setting signal indicative of a desired automobile speed;

an actuator responsive to said speed difference signal for adjusting the opening of a throttle valve to change the speed of an automobile in order to eliminate said speed difference signal;

a cancel switch for cancelling a constant-speed travel mode of the automobile;

a resume switch for resuming the constant-speed travel mode which has been cancelled;

a timer circuit energizable for a prescribed interval of time in response to the operation of said resume switch while the automobile is running in the constant-speed travel mode;

an acceleration signal generator circuit for generating an acceleration signal in response to the operation of said resume switch for returning said automobile to said desired speed and wherein said acceleration signal generator circuit issues said acceleration signal after said resume switch has been actuated for a period of time which exceeds said prescribed interval of time;

whereby after said prescribed interval of time has elapsed, said automobile speed signal provides said automobile speed setting signal indicative of a desired speed for said constant-speed traveling mode and increases the actual speed of said automobile, while said resume switch is actuated.

4,553,622

SUPPORTING ARM ASSEMBLY FOR A DRIVING WHEEL OF AN AUTOMOTIVE VEHICLE

André De Cortanze, Chevry, France, assignor to Elf France, Paris, France

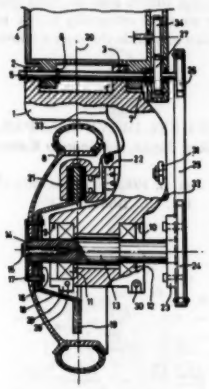
Filed Sep. 1, 1983, Ser. No. 528,582

Claims priority, application France, Sep. 17, 1982, 82 15728

Int. Cl.⁴ B60G *7/02*

U.S. Cl. 180—227 **6 Claims**

1. An oscillating supporting arm assembly for the driving wheel of a motorcycle, comprising an arm mounted to oscillate angularly about a connecting shaft of said motorcycle and cooperating with suspension means between said arm and motorcycle, said wheel being removably fixed to a supporting shaft on one side of the free end of the supporting arm, the supporting shaft extending through said arm on two bearings, a wheel driving pinion is fixed to the supporting shaft, on the side of the arm opposite to the wheel and is driven by a chain mechanically connected to the driving means of the motorcycle, said supporting arm having the configuration of a U with two legs between which the rim and the tire of said rear wheel



are located, one of the legs having hinge connections which cooperate with the connecting shaft of the motorcycle, said wheel has its median plane extending at substantially equal distances from the two hinge connections of the supporting arm, the wheel is rigidly connected to a brake disc cooperating with brake tightening means fixed to said supporting arm and wherein the brake disc is mounted substantially on the longitudinal axis of the motorcycle coinciding equally with the transverse median plane of the wheel so as to limit the torsion of the supporting arm and the reactions to the braking forces.

4,553,623

POWER CHANGE-OVER MECHANISM OF A VEHICLE FOR INDUSTRIAL MACHINERY

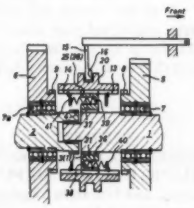
Masahiro Ohkubo, Kadoma, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

Filed Jun. 15, 1984, Ser. No. 621,318

Claims priority, application Japan, Jun. 15, 1983, 58-108286

Int. Cl.⁴ B60K *17/34, 41/22*

U.S. Cl. 180—247 **8 Claims**



1. A power change-over mechanism of a vehicle for industrial machinery including a first driving shaft and a second driving shaft arranged on the same axis center, a high-speed gear and a low-speed gear fitted in said first and second driving shafts respectively, splines formed on said both shafts and both gears, a power change-over annular spool disposed between

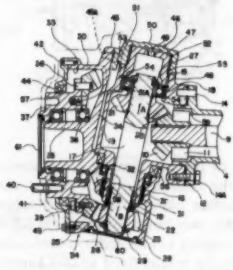
the both gears freely slidingly operably in the axial direction, splines formed on said spool, the slow-speed gear being interconnected through the spool to the first and second driving shafts when the spool is at a four-wheel drive position, and the high-speed gear being interconnected through the spool to the first driving shaft when the spool is at a two-wheel drive position; characterized by that the spool is divided into two members: an outer peripheral side member having splines meshing freely with the splines of said gears and an inner peripheral side member having a spline meshing freely with the splines of said driving shafts, and the both members are connected each other so as to integrally rotate in the rotational direction and to relatively slide through a damper means in the axial direction.

4,553,624

FRONT-WHEEL DRIVING APPARATUS

Takashi Yoshii, Sakai, Japan, assignor to Kubota, Ltd., Osaka, Japan

Filed Jun. 6, 1983, Ser. No. 501,235
Int. Cl.[4] B60K *17/30*
U.S. Cl. 180—255 **8 Claims**



1. A front wheel driving apparatus comprising:
a front axle case (4) housing a differential output shaft (9) with an output bevel gear (10) at the end portion thereof;
a bevel gear case (13) removably attached to the outer end of said front axle case (4) and having upper and lower tubular portions aligned coaxially; and
a kingpin (17) journalled at the upper portion thereof to said upper tubular portion by a radial bearing (18) and at the lower portion thereof to said lower tubular portion (16) by a needle bearing (19) and securing at the upper end thereof a thrust retainer (27) upwardly adjacent to said radial bearing (18), said kingpin (17) having a bevel gear (21) in mesh with said output bevel gear (10) and a bevel gear (23) in mesh with a reduction bevel gear (25) for driving a front wheel (2) at the lower end thereof downwardly projecting from said bevel gear case (13), said two bevel gears (21), (23) being so disposed that axial thrust exerted on said kingpin (17) by said respective gears (21), (23) can be balanced.

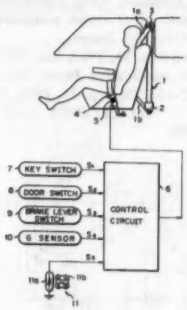
4,553,625

AUTOMOBILE SEAT BELT SYSTEM WITH AUTOMATIC UNLOCKING FUNCTION

Noboru Tsuge, Kariya, and Masahiro Taguchi, Okazaki, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Aug. 22, 1983, Ser. No. 525,542
Claims priority, application Japan, Aug. 30, 1982, 57-150455
Int. Cl.[4] B60R *21/10*
U.S. Cl. 180—268 **22 Claims**

4. A seat belt system for an automobile, comprising:
a seat belt retractor anchored to a frame of said automobile;
a seat belt having one end anchored to said automobile frame and another end secured to said retractor;
a tongue plate secured at an intermediate position of said seat belt;
a buckle anchored to said automobile frame, said buckle having a means for locking said tongue plate and a means for unlocking said tongue plate;
means for selectively actuating said unlocking means; and



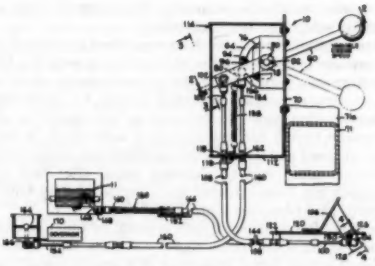
means for controlling said actuating means, wherein said controlling means includes a means for detecting whether a brake lever of said automobile is turned on and a means for driving said actuating means to actuate said unlocking means a predetermined time period after said brake lever is turned on.

4,553,626

SPEED CONTROL MECHANISM FOR A HYDROSTATICALLY DRIVEN VEHICLE

Walter Kazmierczak, Colton, and Edward M. Assony, Westminster, both of Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Sep. 9, 1983, Ser. No. 530,831
Int. Cl.[4] B60K *26/00*
U.S. Cl. 180—307 **25 Claims**



1. A speed control mechanism for controlling the throttle of a governor controlled engine and an inching valve of a hydrostatic pump that is operatively connected to at least one hydraulic motor connected to wheel means, the improvement comprising:
a depressible accelerator means movable in a range between engine idle and high speed positions;
selector lever means movable between variable and governor controlled engine speed positions;
first movable arm means operatively connected to the engine throttle, to said selector lever, and to said accelerator means for movement by depressing said accelerator means between an idle and a high engine speed position when said lever is in said variable engine speed position, when said lever is in said governor controlled engine speed position, said first arm means being maintained in said

governor speed position and out of operative engagement with said accelerator means; and

second movable arm means operatively connected to said accelerator means, the inching valve, and said first arm means;

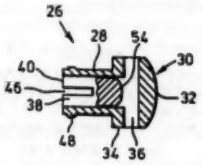
when said selector lever is in said variable engine speed position, progressive depression of said accelerator means being effective to progressively move said first and second arm means for progressively opening the engine throttle from idle speed to a high speed, and progressively closing said inching valve from an open position to a substantially closed position being. effective to progressively drive said wheel means at higher speeds;

when said selector lever is in said governor speed position, progressive depression of said accelerator means being effective to progressivley close only said inching valve for controlling the speed of said wheel while the engine speed is controlled by the governor.

4,553,627
HEARING AID WAX GUARD

William J. Gastmeier, Waterloo, and Rolf Dohmer, Kitchener, both of Canada, assignors to Unitron Industries, Kitchener, Canada

Filed Oct. 22, 1984, Ser. No. 663,735
Int. Cl.[4] A61B *7/02;* **H04R** *25/02*
U.S. Cl. 181—135 **8 Claims**



1. A wax guard comprising:

(a) a head of substantially circular configuration as viewed from one end thereof,

(b) a stem projecting axially from the other end of said head and being integral with said head, said stem having a substantially circular cross section and being of smaller diameter than that of said head,

(c) said head having a cross passage extending therethrough, said cross passage having in cross section a substantially planar lower surface adjacent said other end of said head and having a domed upper surface,

(d) said stem having an axial passage extending therethrough and intersecting said cross passage in said head,

(e) an acoustic filter located in said axial passage and clear of said cross passage to allow a cleaning instrument to be pushed through said cross passage, and

(f) said stem having a free end having a flared resilient tip adapted to secure said stem within an opening of a hearing aid.

4,553,628
SPEAKER SYSTEM

Hisatsugu Nakamura, 13-3-1001 Roppongi, 5-chome, Minato-ku, Tokyo, Japan (106)

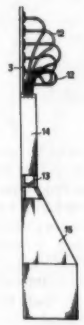
Filed Aug. 15, 1983, Ser. No. 523,454
Claims priority, application Japan, Oct. 18, 1982, 57-182273
Int. Cl.[4] H05K *5/00*
U.S. Cl. 181—145 **10 Claims**

1. A speaker system comprising:

a plurality of speakers, each of said speakers having a diaphragm for radiating sound, each of said diaphragms having a front and a rear face;

a plurality of acoustical baffle means equal in number to the number of said speakers, each of said acoustic baffle means associated with the rear face of one of said speakers, each of said acoustic baffle means having an opening with said opening located in said acoustic baffle means so as to receive sound radiated from said rear face of its respective associated diaphragm;

a plurality of sound radiation conducting tubes, each of said tubes having a first end and a second end with a hollow interior extending between said ends, said plurality of tubes equal in number to the number of said speakers, each of said tubes associated with one of said acoustic baffle means by attaching said first end of said tube to said one of said acoustic baffle means at said opening in said acoustic



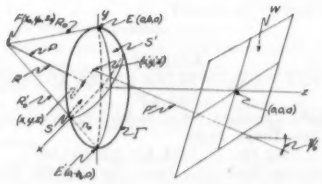
baffle means and when so attached said tube receiving sound radiation propagated through said opening in said acoustic baffle means from said rear face in said diaphragm;

an acoustic resonator chamber for radiating sound, said acoustic resonator chamber having a receiving opening and a radiating opening, each of said second ends of said tubes attaching to said receiving opening so as to propagate sound radiation through said receiving opening to said resonator chamber, at least a portion of said sound radiation being further propagated from said resonator chamber through said radiating opening.

4,553,629
ELLIPTICIZED ACOUSTICAL LENS PROVIDING BALANCED ASTIGMATISM

Robert L. Sternberg, Noank, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 949,711, Oct. 10, 1978, Pat. No. 4,224,626. This application Apr. 7, 1980, Ser. No. 138,013
Int. Cl.[4] G10K *11/00*
U.S. Cl. 181—176 **7 Claims**



1. An ellipticized singlet azimuth versus elevation optimized and aperture extremized nonspherical acoustic lens with surfaces S and S′ specified by the partial differential equations

$$S: \frac{\partial z}{\partial x} = F(A) \qquad \frac{\partial z}{\partial y} = G(A),$$

-continued

$$S: \frac{\partial(z',y')}{\partial(x,y)} = F(A)\frac{\partial(x',y')}{\partial(x,y)} + \frac{\partial(z',z')}{\partial(x,y)} = G(A)\frac{\partial(x',y')}{\partial(x,y)},$$

the symmetry conditions

$$z(-x,y) = z(x,y),\ z'(-x',y') = z'(x',y'),$$

$$z(x,-y) = z(x,y),\ z'(x',-y') = z'(x',y'),$$

and the boundary conditions

$$z(x,y)=z'(x,y)=0,$$

on the ellipse

$$\Gamma: (x^2/b_o^2\cos^2\psi_o)+(y^2/b_o^2)=1$$

where

S and S' are the lens surfaces having functional representations of the forms $z=z(x,y)$ and $z'=z'(x',y')$ wherein x' and y' are themselves functions $x'=x'(x,y)$ and $y'=y'(x,y)$ of the independent variables x and y, $(\partial z/\partial x)$ and $(\partial z/\partial y)$ are the partial derivatives of z with respect to the independent variables x and y respectively, $\partial(z',y')/\partial(x,y)$, $\partial(x',y')/\partial(x,y)$ and $\partial(x',z')/\partial(x,y)$ are the Jacobian of z' and y' with respect to the independent variables x and y, the Jacobian of x' and y' with respect to the independent variables x and y and the Jacobian of x' and z' with respect to the independent variables x and y respectively, F(A), G(A), F'(A) and G'(A) are the functions of the arguments $A=(x,y,z,x',y',z')$ defined as

$$F(A) = \frac{n_o(x'-x)p - xp'}{(z-z_o)p' - n_o(z'-z)p},$$

$$G(A) = \frac{n_o(y'-y)p - (y-y_o)p'}{(z-z_o)p' - n_o(z'-z)p},$$

$$F'(A) = \frac{n_o(x'-x)}{p'\cos\psi_o - n_o(z'-z)},\ G'(A) = \frac{n_o(y'-y)+p'\sin\psi_o}{p'\cos\psi_o - n_o(z'-z)},$$

and where p and p' denote the path length elements defined by the expressions

$$p^2=x^2+(y-y_o)^2+(z-z_o)^2, p'^2=(x'-x)^2+(y'-y)^2+(z'-z)^2,$$

and n_o, y_o, z_o and ψ_o are respectively, the index of refraction of the lens material, the y and z coordinates of the finite focal point F and the off-axis angle to the infinite focal point F_∞, Γ is the ellipse bounding the lens formed by S and S' and is defined by the equation shown in which x and y are the independent variables and b_o is the maximum radius of the lens formed by S and S' and the semi-major axis of the ellipse Γ.

4,553,630

SPEAKER WITH TWEETER ANGLE ADJUSTING DEVICE

Tomiaki Ando, Yamagata, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 17, 1985, Ser. No. 692,349

Claims priority, application Japan, Jan. 19, 1984, 59-4606[U]

Int. Cl.⁴ H05K *5/00*

U.S. Cl. 181—144 **3 Claims**

1. A compound speaker with a tweeter angle adjusting mechanism including

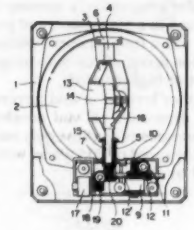
a woofer having a sound axis extending in a vertical direction;

a horizontal shaft supported on said woofer perpendicularly to said sound axis of the woofer and axially rotatable;

a horizontal adjusting knob axially disposed in parallel with and in a same rotating direction as said horizontal shaft, said horizontal adjusting knob being connected to said horizontal shaft through a first interlocking mechanism;

a tweeter having a sound axis perpendicular to said horizontal shaft;

a tweeter housing which is secured to said horizontal shaft



and which supports said tweeter through a vertical shaft rotatably in a direction perpendicular to the horizontal shaft; and

a vertical adjusting knob connected to said tweeter through a second interlocking mechanism to rotate in a same direction as the tweeter and journalled in a direction perpendicular to said horizontal shaft.

4,553,631

SOUND ABSORPTION METHOD AND APPARATUS

Michael J. Panza, Erie, Pa., assignor to United McGill Corporation, Groveport, Ohio

Filed May 19, 1983, Ser. No. 496,066

Int. Cl.⁴ E04B *1/82*

U.S. Cl. 181—291 **32 Claims**

1. Sound-absorbing panel for use in clean-room environment comprising:

a fibrous core having a first extensive surface, a second extensive surface parallel to and spaced apart from said first extensive surface and a thickness being the perpendicular distance between said extensive surfaces;

a non-porous membrane being disposed to enclose said fibrous core, said membrane being attached to at least one of said extensive surfaces in a continuous pattern of closed geometric figures, the places of attachment defining the edges of said geometric figures, the membrane occupying the central portion of each of said geometric figures defining a diaphragm, the dimensions of said diaphragm being configured such that the low order natural frequencies of vibration of said diaphragm substantially corresponds to the sound wave frequency range to be absorbed.

4,553,632

AUTO-LEVELED CRANE BOOM MAN BASKETS

Edward E. Griffiths, 3200 Polaris St. #23, Las Vegas, Nev. 89102

Filed Apr. 6, 1984, Ser. No. 597,500

Int. Cl.⁴ B66F *11/04*; **G08B** *21/00*

U.S. Cl. 182—2 **6 Claims**

1. An automatically leveled man basket for attachment to the

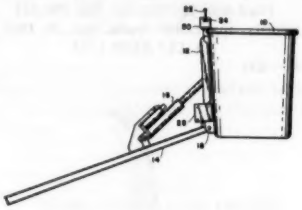
end of a crane boom, such as an electrically insulated crane boom for electrical isolation from ground, said basket including:

a D.C. power source at the basket;

first pivoting means pivotally mounting a lower end of the basket to the end of the boom

a D.C. powered linear power actuator pivotally connected to said boom and to a second pivoting means on the side surface of said basket for tilting said basket around said first pivoting means;

a gravity controlled tilt sensor attached to said basket, said sensor including a fluid chamber containing a weighted



paddle the upper end of which is coupled to a horizontally supported rotatable shaft;

a first potentiometer coupled to said rotatable shaft and said D.C. power source for producing an output signal representing the angle of said weighted paddle from the vertical;

a second potentiometer coupled to said D.C. power source and positioned for producing an output signal representing the angle of tilt of said basket about said first pivoting means; and

servo circuitry responsive to the output signals of said first and said second potentiometers for applying electrical power of appropriate polarity to said power actuator.

4,553,633

SAFETY HARNESS SYSTEM FOR CONFINED SPACE WORKERS

Timothy J. Armstrong, 15 Lisa Ct., Hamilton, Ontario, Canada (L8V 4P9), and Gerrard A. Wynen, 646 Maple Ave., Burlington, Ontario, Canada (L7S 1M6)

Filed Aug. 13, 1984, Ser. No. 640,650

Int. Cl.[4] A62B *1/06, 35/00*

U.S. Cl. 182—3 **4 Claims**

1. In a safety body harness for use by workers operating in confined spaces comprising:

a harness strap extending when in use past a junction of a first end loop in front of and somewhat to a first side of a user's chest, descending downwardly and around said first side of the user's body, through the user's crotch from the rear, up and around the hip on said first side of the body through a cross connection with the strap descending on said one side of the body, across the back and over the shoulder on the other side of the body past a second end loop somewhat to the other side of the user's chest, round the other side of the user's body, through the crotch from the rear, up and around the other hip through a cross connection with the strap descending on the other side of the body, across the back in the other direction and over the shoulder on the first side of the body to the junction with the first end loop,

a chest strap surrounding the user's body when in use, and connected to the harness strap at its points of intersection with the latter, and

a seat strap connecting portions of the harness strap passing beneath the buttocks of the user;

the improvement comprising:

a first additional cross strap connecting portions of the harness strap in front of the crotch of the user; and

a second additional cross strap connecting portions of the harness strap behind the neck of the user.

4,553,634

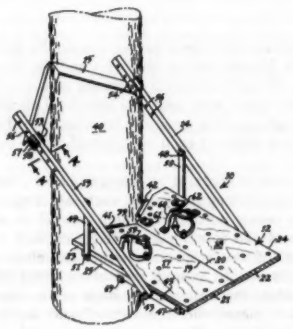
TREE STAND

Manuel E. Roberts, 4309 Westlawn Dr., Nashville, Tenn. 37209, and Thomas W. Ketchum, Hannah Ford Rd., Pegram, Tenn. 37143

Filed Feb. 26, 1985, Ser. No. 705,784

Int. Cl.[4] A47C *9/10;* **A45F** *3/26;* **A01M** *31/02*

U.S. Cl. 182—134 **14 Claims**



1. A tree stand comprising:

(a) a platform having a rear edge for engaging a tree trunk, a front edge, a pair of opposed straight, parallel side edge portions, and top and bottom surfaces,

(b) a pair of opposed elongated support arms, each arm having a front and rear end portion and an intermediate portion,

(c) a pair of struts, each strut having upper and lower ends,

(d) first means pivotally connecting each of the upper ends of said struts to an intermediate portion of a corresponding support arm,

(e) second means pivotally connecting each of the lower ends of said struts to a rear portion of the corresponding side edge portion of said platform,

(f) pivotal mounting means for mounting the front end portions of both said support arms for swinging movement in planes normal to said platform and parallel to said side

edge portions, whereby said support arms may be moved between an operative position inclined upward and rearward from said platform and extending rearward behind said rear edge, and a collapsed position in which said support arms lie substantially colinearly of said corresponding opposite side edge portions,

(g) a cross bar having opposite end portions and adapted to engage a tree trunk,

(h) connector means for adjustably connecting the opposite end portions of said cross bar to said pair of support arms, to position said cross bar against and behind a tree trunk straddled by said support arms and engaged by said rear edge of said platform.

4,553,635

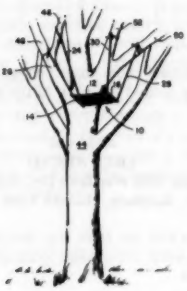
PORTABLE TREE STAND

Vaino A. Johnson, 215 Rankin St., Rockland, Me. 04841

Filed Apr. 25, 1985, Ser. No. 727,106

Int. Cl.⁴ A47C *9/10*; A45F *3/26*; A01M *31/02*

U.S. Cl. 182—187 **3 Claims**



1. A portable tree stand having a generally rectangular seat, for use by hunters, nature observers and the like, comprising:

a pair of rigid structural elements adjacent opposite side edges of said seat, each said structural element defining a through opening generally transverse to the axis of said element adjacent each end thereof, at the corners of said seat,

at each side of said seat, attachment means consisting of first and second lengths of rope, each said length of rope having a center portion extending parallel to said structural element and forming a side edge of said seat along the inside of the respective structural element, and said lengths of rope, at both ends of each said center portion, extending through said openings in the respective structural elements, the free ends of said ropes adapted for attachment to said tree,

the seat extending between the side edges formed by the center portions of said ropes comprising a multiplicity of crossed seat cords, said cords being affixed to each other at their intersections to form a weight-supporting mesh, and said seat being affixed to the center portions of the ropes at the side edges of said seat, at the corners of said seat, ends of said cords extending through said openings in said rigid structural elements and joined to said first and second ropes outside said rigid structural elements, the means joining said ropes and said cords being of a size relative to the openings in said elements to prevent movement of said structural elements outwardly, along the free ends of the first and second ropes, away from the side edges of said seat,

whereby the seat is adapted to be suspended in a tree by attachment of the free ends of the first and second ropes extending from adjacent the corners of the seat to branches of the tree, and, upon removal from the tree, the tree stand is further adapted to be rolled into a compact package for ease of carrying.

4,553,636

LIFESAVING APPARATUS FOR ESCAPING FROM A BUILDING

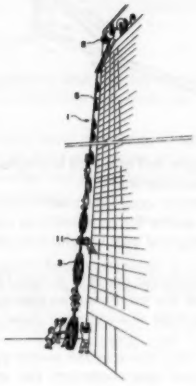
Hideo Itoh, 10 27-chome, Kita 7 Jo Nishi Chuo-ku Sapporo City Hokkaido; Hideki Itoh, 21 11-Chome, Kita 23 Jo Nishi Kita-ku Sapporo City Hokkaido, and Hideya Itoh, 10 27-Chome Kita 7 Jo Nishi, Chuo-ku Sapporo City Hokkaido, all of Japan

Filed Apr. 3, 1984, Ser. No. 596,351

Claims priority, application Japan, Apr. 25, 1983, 58-61870

Int. Cl.⁴ A62B *1/02*

U.S. Cl. 182—231 **10 Claims**



1. A lifesaving apparatus for providing quick escape from the upper floors of a tall building, said apparatus including

a hoisting device positionable on the building at a point above the floors thereof from which escape is desired,

a fire-resistant rope element connected to said hoisting device so as to be raised and lowered with respect to the ground by said hoist device, said rope element including at least one attachment means, and

at least one container device which is removably attachable to an attachment means on said rope element, each container device including an upwardly open, bowl-shaped bottom, a downwardly open, bowl-shaped top, a hook device attached to said top, and a collapsible, fireproof wall means connected between said bottom and said top, said collapsible, fireproof wall providing a closable entry opening.

4,553,637

POLLUTION INHIBITOR PACKING NUT

Mark Tanner, Rte. 5, 412 Canal St., Houma, La. 70360

Filed Mar. 29, 1984, Ser. No. 594,788

Int. Cl.⁴ A47L *25/00*; F16N *31/02*

U.S. Cl. 184—15.1 **6 Claims**

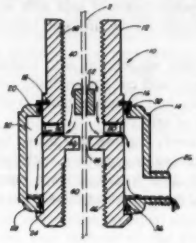
1. A wireline cleaning unit, comprising:

a. a packing nut having a longitudinal bore therethrough;

b. means in said bore for removing fluid from a wireline running through said bore;

c. means for channeling said fluid out of said longitudinal bore; and

d. means for receiving and channeling said fluid from said longitudinal bore to a container comprising



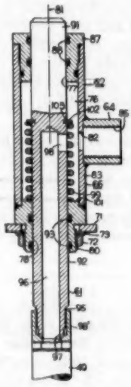
a housing in sealed engagement around said packing nut, the walls of said housing defining a chamber around said packing nut.

4,553,638

HOSE TENSIONING DEVICE

William C. Ray, Cedar Lake, Ind., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jul. 13, 1984, Ser. No. 630,746
Int. Cl.[4] B66B *9/20*
U.S. Cl. 187—9 E **8 Claims**



1. A hose tensioning device for a flexible hose comprising:

a pair of relatively reciprocatable fluid conveying elements,

one of said elements being adapted for rigid mounting on a support and including wall means defining a passage therethrough including cylindrical surfaces defining coaxial cylindrical bores adjacent opposite ends of said passage and a port at one side of said one element in fluid communication with an intermediate part of said passage and adapted for connection to a fluid conduit,

the other of said elements including cylindrical portions complementary to and slidingly engaging said cylindrical surfaces and having an end portion extending in one axial direction beyond said one element,

said other element including wall means defining an axial port in said end portion, a radial opening in an intermediate part of said other element, said intermediate part disposed within said one element and an interior passageway extending between and interconnecting said axial port and said radial opening,

said end portion being adapted for connection to a flexible hose extending in said one axial direction in generally aligned relation to said bores, and

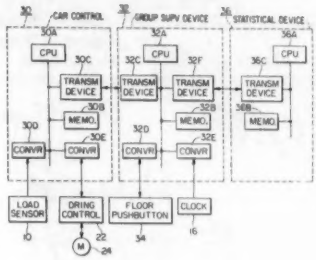
resilient biasing means interposed between said elements operative to urge said other element axially in an axial direction opposite to said one axial direction whereby said hose is tensioned.

4,553,639

ELEVATOR SUPERVISION SYSTEM

Kenichi Uetani, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 7, 1984, Ser. No. 577,781
Claims priority, application Japan, Feb. 21, 1983, 58-27274
Int. Cl.[4] B66B *1/18*
U.S. Cl. 187—29 R **5 Claims**



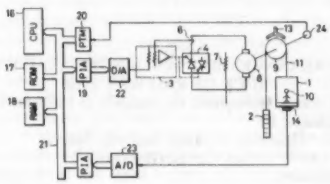
1. An elevator supervision system for supervising the operation of elevator cars by determining statistics of past traffic statuses of said elevator cars with respect to a time thereof on every day by a statistical device, and for predicting a present or a future traffic status of said elevator cars from the results of said statistics, which system comprises a traffic pattern sensing means for sensing the occurrence of a load on said elevator car which is not less than a predetermined magnitude and for also sensing the absence of said elevator cars with said loads which are not less than said predetermined magnitude, said traffic pattern sensing means recording a time of the occurrence of said load and a time of the absence of said elevator cars with said loads, and a traffic pattern selecting means for predicting a time of selection of a present or a future traffic pattern of said elevator cars on the basis of said recorded times.

4,553,640

CONTROLLER FOR ELEVATOR

Hiromi Inaba; Seiya Shima, both of Katsuta; Takeki Ando, Naka; Toshiaki Kurosawa, Katsuta; Yasunori Katayama, Hitachi; Takanobu Hatakeyama, and Sadao Hokari, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 1, 1982, Ser. No. 413,820
Claims priority, application Japan, Sep. 4, 1981, 56-138448
Int. Cl.[4] B66B *1/28*
U.S. Cl. 187—29 R **18 Claims**



1. In an elevator system consisting of an elevator car that services a plurality of floors, a rope attached to the car at one end and a counterweight at the other, and a motor for driving

the elevator car through the rope; an elevator controller comprising means for generating an acceleration command for the elevator car and a means for directly controlling the motor according to the acceleration command.

4,553,641

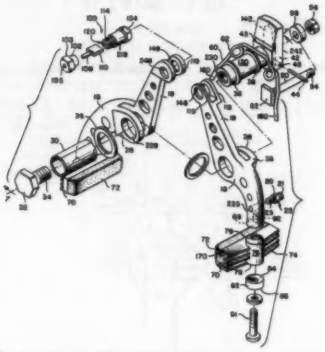
HAND-OPERATED BICYCLE BRAKE ASSEMBLY

Edward L. Scott, South Highway 75, Ketchum, Id. 83340, and Walter D. Teague, Jr., 155 Tweed Blvd., Nyack, N.Y. 10960

Filed Sep. 22, 1983, Ser. No. 534,678

Int. Cl.[4] B62L *1/00, 1/10*

U.S. Cl. 188—24.22 **22 Claims**



1. A hand-operated bicycle brake comprising:

a pair of caliper arm means of complementary, similar construction for effecting a braking action;

means for mounting a brake shoe at one end of each of said pair of caliper arm means;

means at the opposite end of each pair of caliper arm means for attaching actuating cable structure thereto;

bearing means for pivotably supporting said pair of caliper arm means in an interengaged manner from a bicycle frame;

said means for attaching actuating cable structure to said caliper arm means inciuding cable clamp structure comprising a complementary nut and bolt, and cable clamping means therebetween;

said cable clamping means comprising said bolt having a threaded projection extending therefrom with a slot extending from the outer end of said projection toward the bolt head, and said nut having an internally threaded portion for complementary threaded engagement with the threaded projection of said bolt, and means on said nut for squeezing the cable and locking it in position as the nut and bolt are screwed together; and

said means for squeezing and locking the cable including a clamping block attached to the nut, said clamping block being rotatably mounted on the nut.

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BRAKE ARRANGEMENT FOR SINGLE AXLE WHEEL TRUCK OF RAILWAY CAR

Donald B. Yates, Homewood, Ill., assignor to Pullman Standard Inc., Chicago, Ill.

Filed Oct. 17, 1983, Ser. No. 542,443

Int. Cl.[4] B61H *13/36*

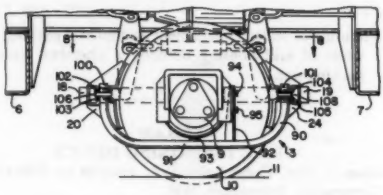
U.S. Cl. 188—56 **17 Claims**

1. In a brake arrangement for a single axle wheel truck for a railway car having a car body portion, said truck having a wheel and axle assembly including an axle having a wheel mounted adjacent an end portion, said wheel having a braking surface and said end portion of said axle being rollingly engaged with an axle housing, the improvement comprising:

a pair of brake beams, each of said brake beams being positioned on opposite sides of said axle and having a brake head for brakingly contacting said braking surface on said wheel;

means for movably suspending said brake beams from said body portion of said car for enabling said brake beams to move laterally and longitudinally with respect to said body portion of said car;

means for selectively forcing said brake heads of said brake beams into braking engagement with said braking surface of said wheel, said forcing means being movingly supported on said body portion of said car and on said brake beams; and



engaging means being connected to said brake beams and said axle housing and engaging each of said brake beams to said axle housing for causing said brake beams to move with said wheel and axle assembly when said wheel and axle assembly moves laterally and longitudinally with respect to said body portion of said car for maintaining said brake heads aligned with said braking surface on said wheel under substantially all operating conditions of said wheel truck, and

said engaging means having means limiting lateral and longitudinal movement of the brake beams relative to the axle housing whereby said brake beams are forced to move with said wheel assembly and are able to move with respect to said body portion of said railway car for maintaining said brake beams operatively aligned with said wheel assembly.

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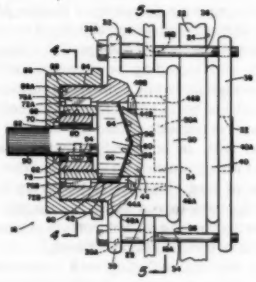
DISC BRAKE FOR TRUCKS

Charles F. Wilcox, Box 3, Bartlesville, Okla. 74003

Filed Nov. 9, 1983, Ser. No. 549,796

Int. Cl.[4] F16D *65/56*

U.S. Cl. 188—71.9 **3 Claims**



1. A brake system for a vehicle having an axle rotatably supporting a wheel hub, comprising:

a brake disc coaxially positioned on a vehicle axle, the disc having inboard and outboard parallel planar surfaces;

a housing supported by the vehicle in proximity to said disc, the housing having a forward end and a rearward end, the rearward end facing said disc, the housing having an opening therein the longitudinal axis of which is perpendicular the disc planar inboard surface;

a pad support slideably and non-rotatably received in said housing opening at the housing rearward end, the pad support on its forward end being defined by two planes intersecting a plane of the pad support longitudinal axis at equal angles whereby in cross-section the pad support forward end defines an obtuse V;

an actuator rotatably supported within said housing opening having a shaft portion extending externally of the housing forward end, the actuator having a rearward face defined by two planes intersecting at equal angles to a plane of the shaft axis, the end surface of the actuator defining an obtuse V, the rearward end face of the actuator engaging said pad support forward end;

a first brake pad affixed to said pad support rearward end;

an outboard pad support means affixed to said housing and extending past said disc outboard planar surface;

a second brake pad affixed to said outboard pad support mean spositioned in close proximity to said disc outboard surface, whereby when said actuator shaft is rotated said actuator rearward face reacts with said first pad support forward face to displace said pad support towards said disc inboard surface and as said housing is deflected by contact of said first pad with said disc force is applied to move said second pad against said disc outboard surface;

a tubular actuator locator slideably and non-rotatably supported within said housing opening having a rearward end in engagement with said actuator forward end, the interior tubular surface being threaded;

a tubular ratchet member having external threads and being threadably positioned within said tubular actuator locator, the interior diameter of the ratchet member being greater than the external diameter of said actuator shaft and having paralleled, evenly spaced slots therein in planes of the tubular axis, said actuator locator and ratchet member being axially concentric about said actuator shaft; and

a pawl member affixed at one end to said actuator shaft and extending in a plane perpendicular the shaft axis, the other end engaging said slotted interior surface of said ratchet member.

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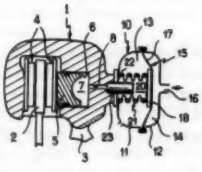
HYDRO-PNEUMATIC BRAKING DEVICE

Carlos M. Folch, Barcelona, Spain, assignor to Bendiberica S.A., Barcelona, Spain

Filed Apr. 5, 1984, Ser. No. 597,147
Claims priority, application Spain, Apr. 8, 1983, 521783
Int. Cl.⁴ F16D *65/20*
U.S. Cl. 188—72.4 **8 Claims**



1. A hydro-pneumatic braking device, comprising at least one friction member mounted adjacent a rotatable component to be braked, a hydraulic operating device mounted adjacent said friction member and operable by a liquid under pressure to urge said friction member into braking engagement with said rotatable component, and pneumatic actuator means for supplying liquid under pressure to said hydraulic operating means, said pneumatic actuator means including a casing mounted adjacent said hydraulic operating device, an elastic bellows mounted within said casing and defining a hydraulic chamber within said bellows, said hydraulic chamber being in fluid communication with the hydraulic operating device, said bellows cooperating with said casing to define another chamber therebetween, a movable wall structure mounted in said casing and extending transversely across said casing and cooperating with the casing to divide a pneumatic section out of said another chamber, means communicating said pneumatic section with a source of gas under pressure, said bellows having a transverse wall in contact engagement with said movable wall to permit movement of said movable wall to contract said bellows when gas under pressure is communicated into said pneumatic section.

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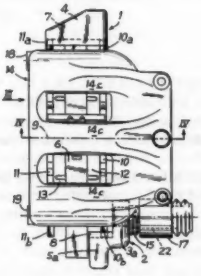
DISC BRAKE

Jean-Claude Méry, Pavillons S/Bois, France, assignor to Allied Corporation, Morristown, N.J.

Filed Jan. 31, 1984, Ser. No. 575,619
Claims priority, application France, Feb. 2, 1983, 83 01621
Int. Cl.⁴ F16D *65/09*
U.S. Cl. 188—73.34 **4 Claims**



1. Disc brake of the type consisting of a fixed support or yoke (2) provided with at least one lateral web (3) and end arms (4,5) having transverse guide housings (7,8), a rotating brake disc (6) positioned beside at least one lateral web (3) of the fixed support (2) and covered by at least one of the end arms (4,5) of the fixed support (2), a pair of friction pads (12,13) positioned on each side of the brake disc (6) and each provided with a lining carrier plate (10 or 11) of which at least one end (10*a*, 10*b* or 11*a*, 11*b*) is mounted and guided in a direction parallel to the axis (9) of the brake disc (6) in one of the transverse guide housings (7,8), together with a caliper (14) which, firstly, covers the friction pads (12,13) and the corresponding portion of the brake disc (6) and secondly, by means of a single pin (15), is mounted on the fixed support (2) so that it is able to move in a direction parallel to the axis (9) of the brake disc (6) under the action of an actuator (16) incorporated in said caliper (14), the caliper (14) also having, on the outer side (14*b*) associated with the outer pad (13), a locking means (18) such as a threaded bolt, whose free end connects the caliper to the outer lining carrier plate, said bolt having an axis offset from the axis of said pin so as to prevent any undersirable pivoting of the caliper (14), characterized in that the single pin (15), viewed in the direction of forward motion (F), is positioned opposite the rear end portion of the inner friction pad (12) in such a way that its orthogonal projection onto the brake disc (6) is at least partially in the path of the latter, and taken in the direction of motion, slightly downstream of the corresponding guide housing (8) made in the fixed support (2), the fixed support (2) having the shape of an L so that its rear arm (5) only extends as far as the inner surface of the brake disc (6) and that the rear end (11*b*) of the outer lining carrier plate (11) has no corresponding guide housing, and in that the caliper (14) incorporates on the outer side (14*b*), a removable suspension means

having an axis (19) securing the rear end portion of the outer lining carrier plate (11) to the outer side of the caliper to secure said outer lining carrier plate thereto, the axis of said suspension means being coaxial with the axis of said pin.

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BRAKE MOTOR WITH AUTOMATIC ADJUSTMENT

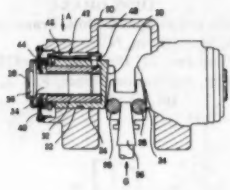
Jean-Jacques Carré , Le Raincy, and Pierre Pressaco, La Courneuve, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed May 21, 1984, Ser. No. 612,942

Claims priority, application France, May 31, 1983, 83 08975

Int. Cl.⁴ F16D *65/56*

U.S. Cl. 188—196 BA **11 Claims**



1. Brake motor with automatic adjustment of the type incorporating a screw/nut system, the lengthening of which is controlled by a device with a toothed wheel and with a pawl which are sensitive to relative axial displacement between a control piston and a fixed body receiving said piston, characterized in that said pawl is associated with said piston to move axially therewith by means of a pivot forming a knuckle, which is functionally integral with said piston, in that said pawl

has a slope interacting elastically with a part fixed to said body, to convert said relative axial displacement into a rotary movement of a portion of said pawl, in that said pawl is applied elastically against the toothed wheel associated with said nut and in that said pivot incorporates

a portion of which is slidable in a groove formed in the body, thus ensuring circumferential relative positioning between the body, the piston and the slope.

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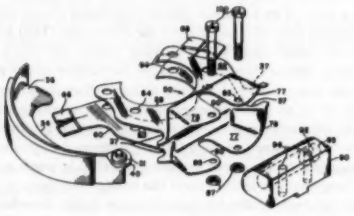
WHEEL CYLINDER AND TORQUE PLATE CONSTRUCTION

Robert Spaargaren, Granger, Ind., assignor to Allied Corporation, Morristown, N.J.

Filed Apr. 5, 1984, Ser. No. 597,146

Int. Cl.⁴ F16D *65/14*

U.S. Cl. 188—206 R **4 Claims**



1. A wheel cylinder and torque plate combination for a drum brake assembly wherein the wheel cylinder includes an actuating piston, said combination including two torque plate parts each comprising a central planar portion affixed to the central planar portion of the other part and to a wheel axle housing or the like, one part having outwardly extending ears with each ear axially parted to provide a space for receiving a portion of an associated brake shoe web therebetween, each part having circumferentially spaced-apart notched portions each oppositely disposed and axially spaced-apart from a notched portion of the other torque plate part and for receiving a brake shoe web between the adjacent torque plate parts, the axially spaced-apart notched portions being shaped to provide curved recesses with each pair of recesses receiving therein a pin extending from an associated brake shoe, and a wheel cylinder housing portion comprising a surface disposed in a plane axially spaced-apart from the plane of the associated central planar portion, the wheel cylinder housing portions having a wheel cylinder with through passages disposed therebetween so that said actuating piston engages an associated brake shoe web extension disposed between said torque plate parts, and the spaced-apart housing portions having openings and interconnected by a pair of connectors extending through the openings of the portions and the through passages of the wheel cylinder in order to secure together and strengthen the housing portions and fixedly capture the wheel cylinder therebetween so that torque received from a pin and associated curved recesses is transmitted to said central planar portions of the torque plate.

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EXHAUST BRAKE APPARATUS OF SLIDING TYPE

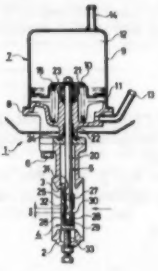
Isao Suzuki, and Kenichi Abe, both of Higashimatsuyama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1984, Ser. No. 630,489

Claims priority, application Japan, Aug. 3, 1983, 58-121114[U]

Int. Cl.⁴ F02D *9/06*

U.S. Cl. 188—273 **3 Claims**



1. An exhaust brake apparatus of sliding type including a valve body which slidably receives a main valve therein for opening or closing an exhaust gas passage, a vent hole formed in the main valve to permit a communication thereacross through the exhaust gas passage, a sub-valve disposed on the main valve so as to be capable of relative displacement within a limited extent thereto for opening or closing the vent hole, and an actuator including an operating rod which drives the sub-valve, the arrangement being such that whenever the exhaust gas passage is to be closed, the main valve is driven to close the exhaust gas passage while simultaneously causing the sub-valve to close the vent and whenever the exhaust gas passage is to be opened, the sub-valve is moved out of its position closing the vent hole before the main valve is driven;

characterized in that the main valve is formed with a plurality of vent holes, which are individually opened or closed by a plurality of sub-valves mounted on the operating rod.

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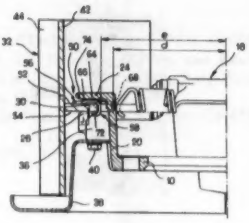
AXIAL RETENTION OF THE SHOE OF A DRUM BRAKE AND A DRUM-BRAKE SHOE EQUIPPED WITH AN AXIAL-RETENTION DEVICE

Ronald D. Bailey, Elyria, Ohio; Jacques Charbonnier, Clichy, and Michel Chotard, Drancy, both of France, assignors to Allied Corporation, Morristown, N.J. and Societe Anonyme D.B.A., Paris, France

Filed Dec. 2, 1983, Ser. No. 557,563
Claims priority, application France, Mar. 11, 1983, 83 04044
Int. Cl.[4] F16D *65/02*
U.S. Cl. 188—340 **6 Claims**



1. Drum brake assembly comprising a fixed support, a pair of brake shoes slidably mounted on said fixed support, each of said shoes having an end adjacent a corresponding adjacent end of the other brake shoe, a brake motor located between said adjacent ends, each of said brake shoes including an arcurate web having a pair of opposite faces, boss means on said fixed support slidably engaging one face of said webs, said fixed support including arm means including a radially projecting portion cooperating with the boss means for receiving said webs therebetween when said brake shoes are installed on the fixed support, and an elastic retention member including a locking portion engaging said one face of said web before said brake shoes are installed on the fixed support and a pair of resilient arm members extending from the locking portion engaging the other face of said web, said resilient arm members engaging said web on portions of the latter offset from the portion of the web engaged by the locking portion to thereby prestress the retention member against said web, said retention member including release means for cooperating with the radially projecting portion of the arm means to release said locking means from said one face of said web when the brake shoes are installed on said fixed support.

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DUAL FUNCTION BRAKE PEDAL PROVIDING SEPARATE CONTROLS FOR HYDRAULIC AND MECHANICAL BRAKES

Edward H. Warwick, Englewood, and Donald L. Parker, Middletown, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

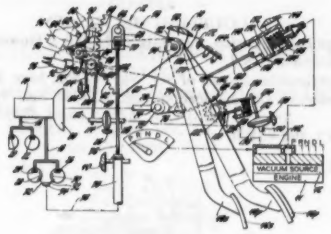
Filed Mar. 7, 1983, Ser. No. 472,711
Int. Cl.[4] B60K *41/28;* G05G *5/24, 13/02*
U.S. Cl. 192—4 A **5 Claims**

1. A brake pedal arm service brake and parking brake arrangement for a motor vehicle comprising:

a vehicle brake having a service brake operator and a parking brake operator;

a brake pedal arm assembly having first and second pedal arms selectively movable together from a first position to a second position to cause operation of said service brake operator, said first pedal arm being selectively movable to a third position and selectively movable from said third position toward said first position to cause operation of said parking brake operator;

each of said first and second pedal arms including pedal positioned for operative foot operation, and means including portions of said first and second pedal arms acting in overlapping relation so that both of said pedal arms are moved together between said first and second positions while permitting said first pedal arm to be moved between said first and third positions without corresponding movement of said second pedal arm, and



means responsive to establishment of a first vehicle control condition to move said first pedal arm to said third position and to disestablishment of the first vehicle control condition to move said first pedal arm from said third position to said first position and to release said parking brake operator.

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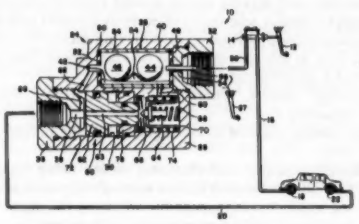
COMBINATION HILL HOLDER AND PROPORTIONING VALVE MECHANISM

Robert F. Gaiser, Stevensville, Mich., and Lawrence R. Myers, South Bend, Ind., assignors to Allied Corporation, Morristown, N.J.

Filed Sep. 2, 1983, Ser. No. 528,812
Int. Cl.[4] B60K *41/24;* B60T *8/00*
U.S. Cl. 192—13 A **9 Claims**



1. A control device for a vehicle having a clutch-like assembly and a brake system wherein fluid pressure is generated in a master cylinder and communicated to a front brake and a rear brake, the control device being disposed in a connecting line between the master cylinder and rear brake so that fluid pressure generated in the master cylinder is communicated through the line to the rear brake via the control device, the control device comprising a proportioning valve responsive to a brake application to selectively alter fluid communication from the control device to the rear brake, and valve means associated with the proportioning valve to control operation of the latter, characterized in that said control device defines a pair of independent fluid paths communicating said master cylinder with said rear brake, said proportioning valve disposed within one of said pair of independent fluid paths and said valve means disposed in the other of said pair of independent fluid paths, said valve means including a pair of valve members and one of said valve members operating in response to the attitude of the vehicle and to the clutch-like assembly in order to close and maintain fluid pressure within the rear brake when the vehicle is disposed on a hill, and the other of said pair of valve members being inertia responsive in order to close and prevent fluid

communication through said other independent fluid path and cause fluid communication through said one independent fluid path when deceleration of the vehicle is above a predetermined value.

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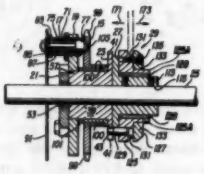
COUPLING MECHANISM

George Fallos, Easton, Pa., assignor to Bell & Howell Company, Phillipsburg, N.J.

Continuation-in-part of Ser. No. 249,562, Mar. 31, 1981, abandoned. This application Aug. 22, 1983, Ser. No. 525,386

Int. Cl.⁴ F16D *7/04, 67/02;* **F16H** *55/30*

U.S. Cl. 192—18 R **15 Claims**



1. A coupling device for selectively connecting driving machinery to driven machinery and for selectively imparting motion to said driven machinery, said coupling device comprising:

support means;

driven means mounted in said support means;

driving means, for imparting motion to said driven means when said driven means engages said driving means, said driving means having a first portion thereof engaged by a drive chain and a second portion thereof selectively engageable with said driven means, said driving means second portion being connectable to said driving means first portion, said driving means second portion comprises:

connector means adapted to selectively connect said driving means second portion to said driving means first portion so long as the torque of said driving means does not exceed a predetermined limit;

carriage means whereon said connector means is mounted;

hub means adapted to be engaged by said driven means; and,

clamping means, said clamping means being secured to said hub means and to said carriage means, said clamping means having means for adjusting the angular relationship of said carriage means with respect to said hub means, and thereby means to permit the adjustment of the positional relationship of said driving means first portion connectable to said driving means second portion with respect to said drive chain engaging said driving means first portion.

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RAPID-STOP TORQUE-TRANSMITTING DEVICE

Rudolf Schneider, Meckenbeuren, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshaften, Fed. Rep. of Germany

Filed Apr. 27, 1982, Ser. No. 372,340

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1981, 3116902

Int. Cl.⁴ B60K *41/24*

U.S. Cl. 192—18 B **3 Claims**

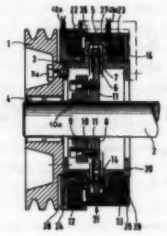
1. A torque-transmitting device for transmitting a torque from a driving element to a driven element rotatable about an axis and for the rapid braking of said driven element, said device comprising:

an armature disk having

an annular inner portion fixed to said driven element,

an annular outer portion surrounding said inner portion and mounted to shift axially relative to said inner portion, said inner portion having outwardly extending radial arms interdigitating with but spaced from inwardly extending radial arms of said outer portion, said arms being coplanar, and

a pair of thin circularly continuous spring rings composed of spring metal flanking said arms and interconnecting same whereby said outer portion can shift axially relative to said inner portion, said spring rings having identical inner and outer diameters and being connected to said arms along a circle centered on said axis;



a first annular member forming a pair of annular magnetic poles connected to said driving element and juxtaposed with said outer portion on one side thereof;

a fixed second annular member having a pair of annular poles juxtaposed with said outer portion on an opposite side thereof; and

selectively operable electromagnetic coils respectively associated with said members for energizing the respective pairs of poles to displace said outer portion into selective engagement with said first member to angularly couple said elements for torque transmission, and into engagement with said second member to brake said driven element.

4,553,654

INSTALLATION FOR CONTROLLING A CLUTCH IN RESPONSE TO DRIVE PEDAL POSITION AND ENGINE SPEED

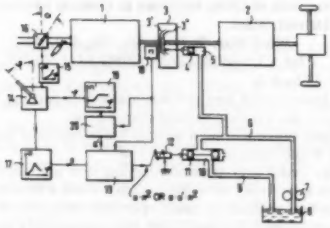
Gerd Bofinger, Stuttgart; Norbert Stelter, and Rainer Wüest, both of Weissach, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Mar. 16, 1983, Ser. No. 475,727

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1982, 3209645

Int. Cl.⁴ B60K *41/02*

U.S. Cl. 192—0.076 **16 Claims**



1. An installation for control of a motor vehicle drive unit having a reciprocating piston engine, clutch means and a transmission, comprising pick-up means for sensing engine rotational speed (n), an actuating means for operatively controlling the force acting on the clutch means, a drive pedal pick-up

means for sensing a position of a drive pedal, said drive pedal controlling throttle valve position of the engine and therewith the engine torque by way of a first characteristic curve converter means, the drive pedal pick-up means applying a signal (a) dependent on the sensed drive pedal position by way of a second characteristic curve converter means to a control means, said control means being operatively connected to the rotational speed pick-up means, and said control means being operable to produce a signal for the actuating means of the clutch means which is equal to the product $a \cdot n^2$ so that torque transmitted by the clutch means is substantially proportional to $a \cdot n^2$.

4,553,655

TWO-STAGE CLUTCH DAMPER ASSEMBLY

Thaddeus Lech, Jr., Farmington Hills, and Paul L. Schmitz, Warren, both of Mich., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 30, 1983, Ser. No. 556,475
Int. Cl.⁴ F16D *3/14*
U.S. Cl. 192—106.2 **14 Claims**

1. A two-stage clutch damper assembly for an automotive vehicle clutch driving a transmission input shaft, including a hub assembly having a barrel splined onto the input shaft and a radial flange having circumferentially spaced windows therein, a clutch plate carrying friction facings at the outer periphery thereof, a spring retainer plate secured to the clutch plate to sandwich the hub flange therebetween, said plates having circumferentially spaced windows therein axially aligned with said hub flange windows, and damper springs received in each set of windows, the improvement comprising a cam and detent arrangement between said clutch plate and hub, a plurality of axially extending compression springs between said hub and one of said cam, spring retainer plate or clutch plate, said hub flange windows extending circumferentially beyond said plate windows to allow limited rotation of the plates relative to said hub without compression of said damper springs, said cam and detent arrangement yieldably resisting said limited rotation.

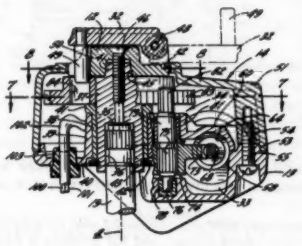
11. A two-stage clutch damper assembly for an automotive vehicle clutch driving a transmission input shaft, including a hub assembly having a barrel splined onto the input shaft and a radial flange, a clutch plate carrying friction facings at the outer periphery thereof, a spring retainer plate secured to the clutch plate to sandwich said hub flange therebetween, said plates and hub flange having axially aligned sets of circumferentially spaced windows therein, and damper springs received in each set of windows, the improvement comprising a cam and ramp arrangement between said clutch plate and hub including a cylindrical cam splined onto said input shaft, axially aligned facing pockets formed in said cam and hub, and compression springs received in said pockets biasing said cam and hub apart, said hub flange windows extending circumferentially beyond said plate windows to allow limited rotation of said plates relative to said hub without compression of said damper springs, said cam and ramp arrangement yieldably resisting said limited rotation.

4,553,656

POWER ACTUATED OPERATOR FOR WINDOWS AND THE LIKE

Robert F. Lense, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.

Filed Oct. 27, 1983, Ser. No. 545,780
Int. Cl.⁴ E05F *15/10*
U.S. Cl. 192—142 R **18 Claims**



1. A power actuated operator for a movable closure, said operator having, in combination, a housing, a driven member mounted on said housing and adapted to be coupled to the closure, a rotatable drive member journaled in said housing and connected to said driven member whereby turning said drive member operates said driven member and moves said closure, a motor disposed within said housing, a speed reducing transmission disposed within said housing and having an input member driven by said motor and an output member, clutch means selectively operable to couple and uncouple said drive member and said output member whereby said motor drives said driven member through said transmission and said drive member when said output member is coupled to the drive member, and a manual member operatively connected to said drive member to turn the latter and drive said driven member independently of said motor and said transmission when the drive member is uncoupled from the output member.

4,553,657

MAGNETICALLY SELECTIVE TOKEN SYSTEM

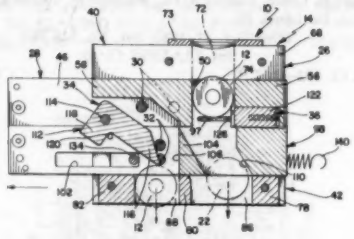
David F. Kilmartin, Glocester, R.I.; David F. Kilmartin, Jr., North Attleboro, Mass., and Albinas A. Cibulsky, North Providence, R.I., assignors to Kilmartin Industries, Inc., Attleboro, Mass.

Filed Feb. 10, 1984, Ser. No. 580,092
Int. Cl.⁴ G07D *5/08*; G07F *7/00*
U.S. Cl. 194—4 R **20 Claims**

1. A magnetically selective token system comprising:
(a) a magnetically responsive valid token having a nonmagnetically responsive peripheral portion; and
(b) a token acceptor comprising:
(i) an acceptor body made of nonmagnetically responsive material having a token inlet slot and first and second token outlet slots therein, said body also having an upper token station therein for receiving tokens from said inlet slot and a lower token station therein for receiving tokens from said upper station;
(ii) first magnetic means operative at said upper token station for magnetically communicating with the peripheral edge portions of a valid token positioned at said upper station but not with other portions of said valid token so that when said valid token is positioned at said

upper station it is substantially unaffected by said first magnetic means but so that when a magnetically responsive counterfeit token having a similar dimension and configuration to said valid token and having a magnetically responsive peripheral portion is positioned at said upper station it is retained at said upper station by said first magnetic means;

(iii) second magnetic means operative at said lower token station for magnetically communicating with the nonp-



eripheral edge portions of said valid token when it is positioned at said lower station to retain it at said lower station;

(iv) means operative for removing said counterfeit token from said upper station and for guiding it to said first outlet slot; and

(v) means operative for removing said valid token from said lower station and for guiding it to said second outlet slot.

4,553,658

APPARATUS FOR DEFLECTING ARTICLES

Markus Gasser, Gächlingen, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

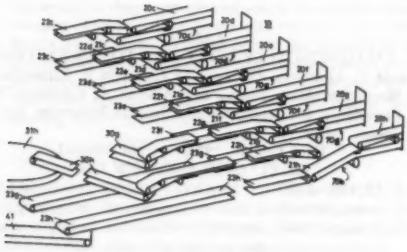
Filed May 3, 1983, Ser. No. 491,240

Claims priority, application Switzerland, May 3, 1982, 2707/82

The portion of the term of this patent subsequent to Feb. 19, 2002, has been disclaimed.

Int. Cl.⁴ B65G *47/46*

U.S. Cl. 198—369 **4 Claims**



1. An article processing line comprising:

(a) a plurality of continuously moving first conveyor means each having a discharge end and a first direction of conveyance; said discharge end having an advanced first position and a withdrawn second position; means for moving said discharge end of each said first conveyor means into and out of said first and second positions;

(b) a plurality of second conveyor means each having an inlet end and a second direction of conveyance; the inlet end of each of said second conveyor means being in a zone of the discharge end of an associated separate, single one of said first conveyor means; said first and second directions of conveyance of each associated said first and second conveyor means being substantially parallel to a common vertical plane; in said first position of the discharge end of any selected one of said first conveyor means the inlet end of the associated second conveyor means adjoins the discharge end of the selected first conveyor means for receiving articles directly therefrom; in said second position of the discharge end of any selected one of said first conveyor means the inlet end of the associated second conveyor means is operatively disconnected from the discharge end of the selected first conveyor means;

(c) a plurality of normally operating processing machines each associated with a respective second conveyor means for receiving articles therefrom;

(d) standby conveyor means situated underneath said second conveyor means for cooperating with each said first conveyor means;

(e) a standby processing machine associated with said standby conveyor means for receiving articles therefrom; and

(f) each said first conveyor means including a deflector conveyor portion adjacent the discharge end of each respective first conveyor means; each deflector conveyor portion being pivotal in a vertical plane to assume an upper position and a lower position; and means for pivoting each deflector conveyor portion into and out of said upper and lower positions; in said lower position the deflector conveyor portion being operatively connected with said standby conveyor means for receiving articles from the discharge end of the respective first conveyor means which has been moved to said second, withdrawn position and transferring articles to said standby conveyor means; in said upper position the deflector portion being inoperative relative to said standby conveyor means.

4,553,659

INSERTION APPARATUS

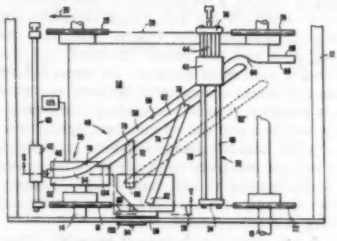
Werner Reim, Waldbronn, and Dieter Plüschow, Stutensee-Friedrichstal, both of Fed. Rep. of Germany, assignors to IWK Verpackungstechnik GmbH, Stutensee, Fed. Rep. of Germany

Filed May 12, 1982, Ser. No. 377,369

Claims priority, application Fed. Rep. of Germany, May 14, 1981, 3119081

Int. Cl.⁴ B65G *47/46*

U.S. Cl. 198—372 **23 Claims**



1. An insertion apparatus for ejecting products which are continuously supplied into containers, said apparatus comprising:

(a) ejection means arranged to move parallel to said products along an endless conveyor system;

(b) a directrix adapted to guide said ejection means laterally shift to said products, said directrix being inclined relative to the direction of movement of said product line; and

(c) means for bypassing the movement of said ejection means relative to said directrix whereby said ejection means

moves independently thereof, said by passing means including

a guide curve adapted to guide the movement of said ejection means relative to said directrix, said guide curve being defined by a groove formed in a cylinder casing mounted on a guide cylinder, said guide cylinder being rotatable, whereby rotation of said guide cylinder from a normal operating position will cause said ejection means to bypass said directrix.

4,553,660

HANDLING ROD-LIKE ARTICLES

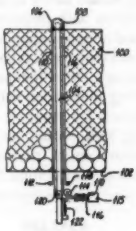
George R. Bennett, and Robert S. Day, both of London, England, assignors to Molins plc, London, England

Continuation of Ser. No. 453,091, Dec. 27, 1982, abandoned, which is a division of Ser. No. 90,432, Nov. 1, 1979, Pat. No. 4,366,895. This application Aug. 29, 1984, Ser. No. 645,178

Claims priority, application United Kingdom, Nov. 1, 1978, 42710/78

Int. Cl.⁴ B65G *47/26*

U.S. Cl. 198—425 **20 Claims**



1. Apparatus for handling rod-like articles comprising means defining a path for rod-like articles in multi-layer stack formation, a separating device including at least two separate bands forming the respective outer sides of the device and guide means for guiding said bands respectively on paths which at least partially overlap in the region of said guide means, means for movingly projecting said device through said stack formation of articles across said path intermediate the ends of said path in a direction transverse to the lengths of the articles in said path and from one side of said path towards the opposite side to locally reduce the width of said path proportionally with said movement, and means for holding part of said bands stationary in said path as said device is moved across said path relative to the articles on either side of said separating device, so that both outer sides of the device comprise stationary parts of the respective bands when said separating device is projected across said path.

4,553,661

APPARATUS FOR HORIZONTALLY AND VERTICALLY TRANSPORTING EGGS WITHOUT DROPPING THEREOF

Jelle van der Schoot, Aalten, Netherlands, assignor to Staalkat B.V., Aalten, Netherlands

Filed Nov. 17, 1983, Ser. No. 552,739

Claims priority, application Netherlands, Nov. 24, 1982, 8204580

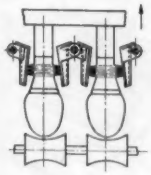
Int. Cl.⁴ B65G *47/26*

U.S. Cl. 198—428 **4 Claims**

1. Apparatus for horizontally and vertically transporting articles, such as eggs, without dropping thereof, comprising:

a. an intermittently substantially horizontally movable conveyor means having a plurality of holders, each designed to hold a single article, and each holder comprising at least two rotary portions, movable between a position in which it supports an article and an open position in which it releases an article; and

b. a transfer station into which said conveyor means transports the articles while the holders are in closed positions, said transfer station including a plurality of gripping means, one for each associated holder in the transfer station, each gripping means gripping an article in a holder, while the holder is in a closed position, and after the holder is opened, each gripping means transporting the article substantially vertically downwardly through opened rotary portions of the associated holder, to minimize dropping and possible breakage of the article.



4,553,662

APPARATUS FOR FEEDING PIECES OF LAUNDRY ON A CONVEYOR

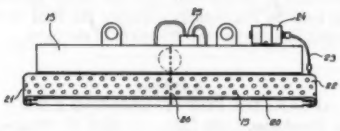
Jorn Munch Jensen, Bern, Switzerland, assignor to Ejnar Jensen & Son Maskinfabrik A/S, Ronne, Denmark

Filed Sep. 7, 1983, Ser. No. 530,130

Claims priority, application Denmark, Sep. 14, 1982, 4093/82

Int. Cl.⁴ B65G *47/26*

U.S. Cl. 198—456 **6 Claims**



1. In an apparatus for the centered feeding of pieces of laundry to a conveyor having a centerline comprising holding means for hangingly supporting a piece of laundry to be fed to said conveyor, said holding means comprising a hollow body having a front face with a plurality of apertures therethrough, said front face disposed transversely to said conveyor centerline, said holding means being reciprocally movable, parallel to said conveyor centerline, between a first position wherein said front face is in front of said conveyor and a second position wherein said front face is disposed above said conveyor; a vacuum source; valve means for connecting said vacuum source to said hollow body and controlling the application of vacuum to said hollow body; the improvement comprising:

said front face comprising a movable member having apertures therethrough, said movable member being movable transversely with respect to said conveyor centerline and said hollow body; and

displacement means for moving said movable member transversely with respect to said conveyor centerline,

whereby an edge of a piece of laundry to be fed to said conveyor may be held against said movable member by vacuum pressure and centered with respect to said conveyor centerline by transverse movement of said movable member, when said holding means is in said first position, and then said holding means may be moved to said second position and said edge of said piece of laundry may be dropped upon said conveyor, by release of vacuum pressure, in centered relation thereto.

4,553,663

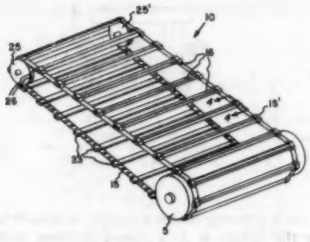
CONVEYOR FOR A CROP HARVESTER

David W. Johnson, Bennet, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 10, 1984, Ser. No. 609,041

Int. Cl.⁴ B65G *19/24*

U.S. Cl. 198—731 **11 Claims**



1. A crop conveying assembly comprising:

a plurality of side by side, spaced apart, flexible belts; and a plurality of connecting links positioned transversely between said side by side belts, each of said belts having an elastomeric body with a top surface, a bottom surface, a high modulus tensile member disposed within said elastomeric body, a plurality of longitudinally spaced lugs integrally molded to the elastomeric body to form the bottom surface, a plurality of longitudinally spaced raised cleats integrally molded to the elastomeric body to form the top surface, a plurality of said cleats having an aperture extending transversely therethrough and wherein the cleats of each belt are positioned such that the apertures therein are transversely aligned with the apertures of an adjacent belt and wherein the plurality of connecting links are positioned to transversely span the space between adjacent belts by removeably engaging the ends of the connecting links within the apertures of the belts.

4,553,664

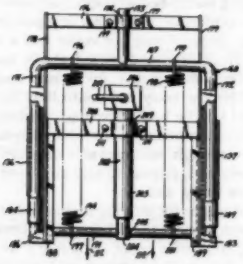
APPARATUS FOR TENSIONING A BELT

Floyd E. Buschbom, Long Lake, and Glen D. Hansen, Maple Plain, both of Minn., assignors to Veda, Inc., Long Lake, Minn.

Continuation of Ser. No. 215,314, Dec. 11, 1980, abandoned, which is a division of Ser. No. 115,608, Jan. 28, 1980, Pat. No. 4,320,825. This application Jan. 3, 1984, Ser. No. 567,147

Int. Cl.⁴ B65G *23/44*

U.S. Cl. 198—814 **10 Claims**



1. An apparatus for tensioning an endless belt comprising:

a fixed support having first and second opposite side members, pulley means for engaging an arcuate end section of an endless belt associated with said support, said belt being movable in a longitudinal direction, a U-shaped tensioning frame including first and second parallel legs connected by a transverse cross member and located adjacent said first and second opposite side members and movably mounted on said support, means rotatably mounting said pulley means on said tensioning frame, first guide means on the first and second support side members mounting said legs of the tensioning frame on said support for linear movement in a direction parallel to said legs to apply tension on the endless belt by shifting said pulley means carried thereby, a tension-enhancing element for said frame having first and second transverse ends, second guide means on the first and second support side members movably mounting the transverse ends of said element on the support for independent movement in the same direction of movement as said tensioning frame, biasing means disposed between said first and second parallel legs connecting said tensioning frame cross member with said tension-enhancing element to bias said tensioning frame in the direction to shift the pulley means to apply tension on the belt, expandable and contractible means disposed between said frame parallel legs having a fixed portion connected to said support and a movable portion connected to said tension-enhancing element, said expandable and contractible means being adjustable by movement of the movable portion with respect to the fixed portion to shift and hold said tension-enhancing element in a selected position relative to said support to adjust the biasing force of the biasing means, drive means including a motor and power transmitting means drivably connecting the motor to the pulley means for rotating said pulley means, and means mounting said motor on said tensioning frame whereby the motor, power transmitting means and pulley means move with the tensioning frame.

4,553,665

REFILLABLE CASE FOR FRESHEN-UP CLOTHS

Heinz H. Weick, 94 Rue de la Servette, 1202 Geneve; Walter Hesener, 66 Rue de la Prulay, 1217 Meyrin-Geneve, and Rolf Wattinger, Im Isisbuel 6, 8800 Thalwil, all of Switzerland

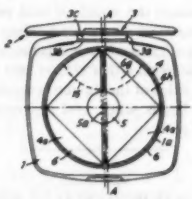
PCT No. PCT/CH82/00133, § 371 Date Aug. 17, 1983, § 102(e) Date Aug. 17, 1983, PCT Pub. No. WO83/02051, PCT Pub. Date Jun. 23, 1983

PCT Filed Dec. 16, 1982, Ser. No. 537,383

Claims priority, application Switzerland, Dec. 17, 1981, 8052/81

Int. Cl.⁴ A45D *37/00, 34/00*

U.S. Cl. 206—37 **10 Claims**



1. A refillable case for a plurality of liquid-impregnated, mutually independent, folded freshen-up cloths, the case having a shallow chamber for accommodating the cloths and comprising: a substantially flat shallow bottom shell having an interior curved peripheral upstanding wall defining an interior chamber having an opening; a substantially flat shallow cover shell engageable with the bottom shell to overlie the chamber over its entire area, the cover shell including an interior curved depending peripheral wall engageable with the peripheral wall in the bottom shell and being displaceable from a closed position in which it at least substantially gas-tightly closes the chamber, into an open position in which the opening of the chamber is exposed; a flat retaining member for retaining the freshen-up cloths and disposed within the plan outline of the

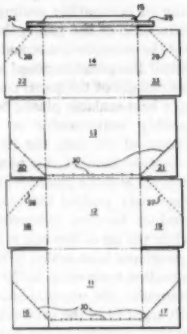
chamber and lying substantially in the plane of the edge of the opening of the chamber, the retaining member overlying a portion of the area of the chamber and carried on a stem secured to the inner surface of the bottom shell, the retaining member extending substantially diametrically across the chamber and projecting for part of its area over at least a substantially half-round region of the plan outline of the chamber.

4,553,666

SHIPPING AND DISPLAY CARTON WITH CUT PROTECTION FOR CONTENTS

Ralph G. Gullikson, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 4, 1985, Ser. No. 697,606
Int. Cl.⁴ B65D *5/54*
U.S. Cl. 206—44 R **4 Claims**



1. A display and shipping carton comprising a front, a top, a back and a bottom panel foldably connected together to form a tubular configuration with open ends, a partial panel connected to said bottom panel and glued to the inside of said front panel at the bottom thereof, a flap foldably connected to the ends of each front, top, back and bottom panel, said flaps being folded over to close said open ends of the tubular configuration with outside flaps being glued to underlying flaps to form closed ends of double wall thickness, a horizontal cut designating line marked across said front panel at a location overlying said partial panel, a horizontal cut designating line marked across the back panel at a position adjacent the top thereof, and diagonal, cut designating lines marked across the outside flaps extending from the ends of the cut designating line on the front panel to the end of the cut designating line on the back panel, and a diagonal perforated line in said underlying flaps in exact underlying registry with the cut designating lines in the outside flaps.

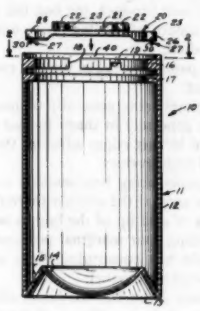
4,553,667

BOWLING BALL CARRYING CONTAINER

John E. Hudson, and David B. Yohe, both of Rte. 1, Box 68, Manton, Calif. 96059

Filed Dec. 27, 1983, Ser. No. 566,048
Int. Cl.⁴ B65D *1/16, 39/10, 85/00*
U.S. Cl. 206—315.9 **1 Claim**

1. A bowling ball carrying container, comprising, in combination, a hollow beer can shaped main body having a cylindrical side wall and a circular bottom wall, said bottom wall including an inwardly extending frustro-conical outer portion around a central outwardly extending rounder portion for mating a spherical contour of a bowling ball that is rested thereupon, an upper end of said main body having a full opening for receiving said bowling ball, a bowler's shoes and other accessories into said container, a removable lid for closing said opening, a pair of spaced apart, inwardly extending annular flanges around said opening for retaining said lid therebetween, a pair of radially outwardly extending projections on diametrically opposite side edges of said lid, a pair of diametrically opposite notches in an upper of said flanges for passage of said projections therethrough and a pair of diametrically spaced-apart recesses on an underside of said upper flanges for



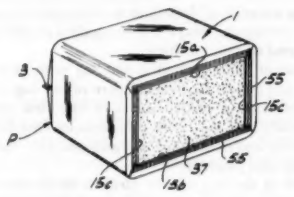
locking said projections therein, a spring-biased pin extending downwardly from each said projection for bearing against a top side of a lower of said flanges and raising said projections into said recesses for said locking; a handle upon a top of said lid, and a beverage brand name being printed on an outer side of said main body.

4,553,668

PACKING ARTICLES, SUCH AS PACKAGES OF ROLLS OF PAPER

Robert C. James, and Lloyd Kovacs, both of Sheboygan, Wis., assignors to Hayssen Manufacturing Company, Sheboygan, Wis.

Filed May 19, 1983, Ser. No. 495,976
Int. Cl.⁴ B65D *33/16*
U.S. Cl. 206—391 **22 Claims**



1. A package comprising:
a bag of flexible packaging material which is heat-sealable at least on the inside;
said bag being formed with a first end closure at one end and an open mouth at its other end;
product in the bag of generally rectangular shape in section transverse to the bag and of generally rectangular shape in section lengthwise of the bag thereby having four generally rectangular sides and first and second generally rectangular ends;
said first end closure of the bag being such as to enable opening up of the bag with portions of said flexible packaging material of the bag at said first end closure of generally rectangular shape corresponding to the shape of said first end of said product;
said product being packed in the bag with its said first end at said first end closure of the bag with said portions of said material of the bag at its said first end closure of generally rectangular shape corresponding to the shape of said first end of said product and generally flat at said first end of

said product, and with the bag generally tight girthwise around said four generally rectangular sides of said product;

the height of the bag being such in relation to the height of the product that, with the bag at its said first end closure of generally rectangular shape and generally flat at said first end of said product, the bag has a lip all around the bag at the mouth of the bag projecting beyond said sides of said product;

a flat closure panel inserted in the bag on said second end of said product;

said closure panel being generally rectangular in shape corresponding generally in shape to said second end of said product and having edges adjacent the edges of said second end of said product;

said closure panel being heat-sealable compatibly with the bag at least around the margin thereof on the ouside for heat sealing of said lip of the bag to said margin;

said lip providing four marginal portions of the bag at the mouth of the bag constituting flaps at each of the four edges of the closure panel;

each flap at any point thereof being of relatively narrow width substantially less than half the distance across the panel from said point;

said flaps being folded over on the outside of said closure panel overlying the closure panel all around the margin thereof and being heat-sealed to said margin thereby forming a second end closure, with a substantial portion of the panel exposed within said flaps.

15. The method of packaging utilizing a bag of flexible packaging material which is heat-sealable at least on the inside and which is formed with a first end closure at one end and an open mouth at its other end, said method comprising:

loading the bag with product through the mouth of the bag;

said product being of generally rectangular shape in section transverse to the bag and of generally rectangular shape in section heightwise of the bag thereby having four generally rectangular sides and first and second generally rectangular ends;

said first end closure of the bag being such as to enable opening up of the bag with portions of said flexible packaging material of the bag at said first end closure of generally rectangular shape corresponding to the shape of said first end of said product;

the product being loaded in the bag with its said first end first and at said first end closure of the bag with portions of the material of the bag at its said first end closure of generally rectangular shape corresponding to the shape of said first end of said product and generally flat at said first end of said product;

the girth of the bag and the girth of the product being such and the product being so loaded in the bag that the bag is generally tight girthwise around said four generally rectangular sides of said product;

the height of the bag and the height of the product being such that, with the bag at its said first end closure of generally rectangular shape and generally flat at said first end of said product, the bag has a lip all around the bag at the mouth of the bag projecting beyond said sides of said product;

inserting a flat closure panel in the bag to lie against said second end of the product;

said closure panel being generally rectangular in shape corresponding generally in shape to said second end of said product and having edges adjacent the edges of said second end of said product;

said closure panel being heat-sealable compatibly with the bag at least around the margin thereof on the outside for heat sealing of said lip of the bag to said margin;

said lip providing four marginal portions of the bag at the mouth of the bag constituting flaps at each of the four edges of the closure panel;

each flap at any point thereof being of relatively narrow width substantially less than half the distance across the panel from said point; and

folding said flaps over on the outside of said closure panel so that they overlie the closure panel all around the margin thereof and heat-sealing said flaps to said margin to form a second end closure, with a substantial portion of the panel exposed within said flaps.

22. The method of packaging comprising loading a bag of flexible packaging material with product through the mouth of the bag and inserting a closure panel through the mouth of the bag with the inside of the closure panel lying against the product, the product height being such that, with the closure panel on the product, the bag has a lip all around the bag projecting beyond said panel at the mouth of the bag, the lip at any point around the bag being of relatively narrow width substantially less than half the distance across the panel from said point, the lip on the inside thereof and the margin of the panel on the outside thereof being of compatible sealing material, folding over the lip on the outside of the panel, the lip extending all around the margin of the panel on the outside of the panel with a substantial portion of the panel exposed within the lip, and sealing the lip to the margin of the panel on the outside of the panel, the bag being a heat-sealable plastic bag and the closure panel being compatibly heat-sealable on the outside face thereof with the plastic of the bag, the lip of the bag being heat-sealed to the outisde face of the panel, the bag being spread open at its mouth, and the product and the end closure panel being simultaneously pushed into the bag through its mouth and the product thereby compressed, compression being maintained while the lip of the bag is folded over on the outside face of the panel and heat-sealed to the coating on said face, the product in section transverse to the bag and the panel being generally rectangular, the product and bag being dimensioned for a relatively tight fit of the product in the bag, the lip comprising four marginal portions of the bag which are folded over around the four sides of the panel on the outside face of the panel, and each of the four marginal portions being heat-sealed to the outside face of the panel, said four marginal portions being heat-sealed to the panel at intervals while compression is maintained, the folding over of the marginal portions being effected by folding members having gaps therein and the heat sealing being effected by entering heat sealing members in the gaps.

4,553,669

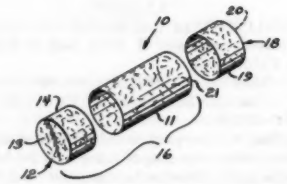
STERILIZATION CONTAINER FORMED OF NONWOVEN MATERIAL

George A. M. Butterworth, Wilbraham, Mass.; William M. Evans, Mundelein, and Howard J. Goldner, Highland Park, both of Ill., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Sep. 15, 1983, Ser. No. 532,462

Int. Cl.[4] B65D *85/50, 5/68, 81/24*

U.S. Cl. 206—439 **5 Claims**



1. A sterilization container capable of withstanding steam sterilizaion without substantial change in physical properties comprising: a receptacle of fluid-repellant, semi-rigid nonwoven material and including a bottom and upstanding side wall means integral with said bottom; and a cover of fluid-replellant, semi-rigid nonwoven material and including a top, and

depending side wall means conforming in shape with said side wall means of said receptacle and sized to engage frictionally and continuously the outer surface thereof to provide a bacterial seal when said receptacle and cover are assembled; said cover and container characterized in that they retain their respective semi-rigid properties after sterilization and are capable of supporting and maintaining the sterility of the contents thereof.

4,553,670

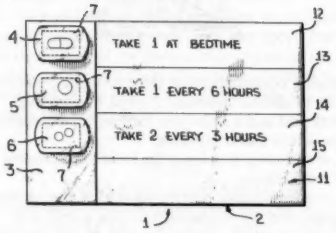
MEDICAL REMINDER DEVICE

Richard Collens, 613 Pinebrook Blvd., New Rochelle, N.Y. 10804

Continuation of Ser. No. 316,917, Oct. 30, 1981, abandoned, which is a continuation of Ser. No. 123,011, Feb. 20, 1980, abandoned. This application Dec. 7, 1983, Ser. No. 558,964

Int. Cl.⁴ B65D *83/04*

U.S. Cl. 206—534 **1 Claim**



1. A method of dosing dispensible ingestible medicinal substances from dispensing containers by correlating the same with respect to identical ingestible though nondispensible medicinal substances comprising the steps of providing a generally planar sheet having opposite surfaces and at least first and second normally open chambers each generally immediately adjacent respective first and second surface portions of the sheet upon which instructions may be written; selecting from first and second sources respective first and second dispensible ingestible medicinal substances and placing a plurality of the first dispensible ingestible medicinal substances in a first dispensing container and a second plurality of the second dispensible ingestible medicinal substances in a second dispensing container with the first and second sources and dispensing containers being separate and isolated from each other and from the first and second open chambers; placing at least one of the first and second dispensible ingestible medicinal substances into the respective first and second normally open chambers; closing the chambers to thereby render the latter ingestible medicinal substances nondispensible while permitting the same to be viewed therein; placing dosing instructions on said first and second surface portions to specifically define the manner, number and/or time at which the first and second nondispensible ingestible medicinal substances in the respective first and second chambers are to be ingested; and following said dosing instructions withdrawing said first and second ingestible medicinal substances from the respective first and second dispensing containers and dosing a patient therewith in the absence of dosing from the first and second chambers whereby, though ingestible, the ingestible medicinal substances of the first and second chambers are neither dispensed nor ingested and function solely as a reminder to select the same dispensible and ingestible medicinal substances from the first and second dispensing containers.

4,553,671

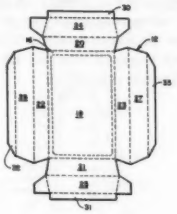
TEAR-OPEN COMPARTMENTED CAT LITTER CONTAINER

Anthony Cheesman, 3959 32nd St., San Diego, Calif. 92104

Filed Sep. 2, 1983, Ser. No. 529,155

Int. Cl.⁴ B65D *5/54*

U.S. Cl. 206—611 **3 Claims**



1. A disposable container with litter for animals compising:
- a top wall member in the form of an elongated sheet of material having a front edge and rear edge and lateral side edges, said top wall member having a central perforated tear-out portion;
- a pair of inside end walls and a pair of inside side walls having their bottom edges connected to the respective side edges and end edges of said top wall member;
- a pair of outside end walls and a pair of outside side walls having their top edges connected to the respective top edges of said inside end walls and said inside side walls, said outside end walls and said outside side walls having a height greater than that of said inside end walls and said inside side walls, respectively;
- means for attaching a bottom cover member to the bottom of said outside walls comprising inwardly extending flanges;
- a bottom cover member;
- a chamber formed between the bottom surface of said top wall member, said end walls, said side walls, and said bottom cover member; and
- said chamber being filled with a predetermined amount of animal litter material.

4,553,672

SELECTION SYSTEM FOR FLAT ARTICLES, PARTICULARLY METAL SHEETS OF DIFFERENT SIZES COMING FROM A SHEARING MACHINE

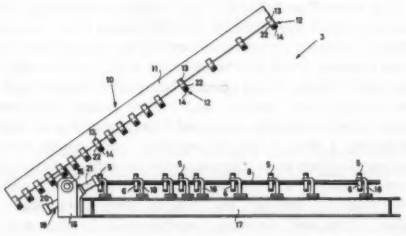
Guido Salvagnini, Sarego, Italy, assignor to Salvagnini Transferica S.p.A., Sarego, Italy

Filed May 17, 1984, Ser. No. 611,154

Claims priority, application Italy, May 20, 1983, 21197 A/83

Int. Cl.⁴ B07C *5/04, 9/00;* **B65G** *37/00*

U.S. Cl. 209—615 **7 Claims**



1. Selection system for flat articles, particularly for metal sheets of different sizes coming from a shearing machine, comprising a plurality of selectors which are arranged along an

advancement path of the articles and can be worked alternately to deviate selected articles from said path to respective collection places, characterized in that each of said selectors is constituted by a rake structure with L-shaped prongs, which is arranged transversally with respect to the advancement path of the articles and can be moved from an upper rest position, where said prongs do not interfer with the advancement of said articles along said path, to a lower pick up position, where said prongs stop the advancement of the articles and then lifted again to an upper discharge position where said prongs, after having lifted said engaged articles, allow their conveyance towards said collection places.

4,553,673

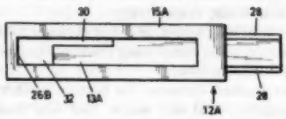
METHOD AND APPARATUS FOR OBTAINING UNDERCUTS OF CONCENTRATES FROM PULP FLOW IN SPIRAL SEPARATORS

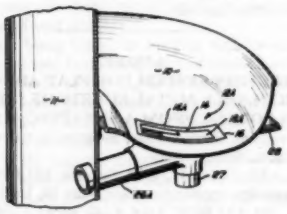
Douglas C. Wright, Terranora, Australia, assignor to Mineral Deposits Ltd., Queensland, Australia

Filed Nov. 2, 1982, Ser. No. 438,590

Int. Cl.⁴ B03B *11/00, 5/52*

U.S. Cl. 209—697 **1 Claim**





1. A take-off assembly for a spiral separator having a trough through which the particles to be separated flow, a mounting member defining a transversely extending substantially rectangular opening adapted to be mounted within said trough, with the upper surface of said opening being substantially flush with the trough lower surface, and tongue means comprising a single member slidably supported in said mounting member for occluding a portion of said opening, said tongue having a peripheral notch at an upstream edge to define a first concentrate opening of a width substantially less than the width of said mounting member, said tongue being retractable transversely from said mounting member so as to form a second concentrate opening of a width substantially equal to the width of said mounting member, said second concentrate opening being adjacent said first concentrate opening, said tongue means having no portion thereof extending above said mounting member opening.

4,553,674

CASING CONSTRUCTION FOR ELECTRONIC EQUIPMENT

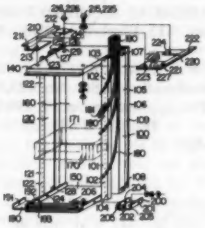
Hiroshi Yoshikawa, Fujisawa; Tetsuya Hattori, Yokohama, and Hideaki Sato, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 28, 1982, Ser. No. 344,185

Claims priority, application Japan, Jan. 30, 1981, 56-11182[U]; Aug. 12, 1981, 56-118777[U]; Sep. 30, 1981, 56-144139[U]; Dec. 11, 1981, 56-183641[U]; Dec. 11, 1981, 56-183642[U]; Dec. 11, 1981, 56-198533; Dec. 11, 1981, 56-198534; Dec. 14, 1981, 56-200169

Int. Cl.⁴ A47F *5/00*

U.S. Cl. 211—26 **11 Claims**



1. A casing construction for electronic equipment including a plurality of shelves mounted therein, comprising:

(a) a left post and a right post forming a pair, each having a large width and comprising:

a first mounting portion at the front for mounting a plurality of shelves;

a second mounting portion located in the vicinity of the upper end for mounting a ceiling board; and

a third mounting portion located in the vicinity of the lower end for mounting a floor board;

(b) a ceiling board mounted on said second mounting portions of said left post and right post; and

(c) a floor board mounted on said third mounting portions of said left post and right post;

wherein said left post and right post forming a pair are each formed by a single member with a reinforcing bent portion disposed sightly toward the rear as viewed widthwise of the posts, said reinforcing bent portion projecting outwardly of a plane connecting the second and third mounting portions together as viewed widthwise of the casing, and wherein a space defined by the bent portion, second mounting portion and third mounting portion forms a space for holding cables.

4,553,675

HYDRAULICALLY OPERATED CRANES

Geoffrey F. Kirk, 30 Freyberg Crescent, Waikanae Beach, New Zealand

Filed Nov. 24, 1982, Ser. No. 444,302

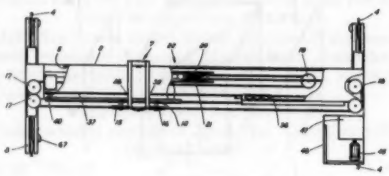
Claims priority, application New Zealand, Nov. 26, 1981, 199082

Int. Cl.⁴ B66C *11/16*

U.S. Cl. 212—205 **10 Claims**

1. A hydraulically operated crane comprising a support structure having a hollow cylindrical travelling bridge, trolley tracks on said cylindrical travelling bridge to support the trolley to a side of said travelling bridge, a hoist block supported from said trolley, a balanced fleet through rope and reeve system supported by said structure to control the lifting and lowering of the hoist block, a hydraulic multiplying linear motor having one end anchored in the support structure to provide operating power for the hoist block, said linear motor having twin opposed hydraulic cylinders, tie rods connecting the cylinders in line with the length of tie rods between adjacent ends of the cylinders determining the operating stroke of

the linear motor, a reeve sheave carrier connected in the space between the cylinders to each operating piston extending from the cylinders, two reeve sheaves mounted on said reeve sheave carrier, end return sheaves at each end of said support structure, two trolley sheaves mounted on said trolley and a diverter sheave supported in said support structure with the operating rope for the hoist block having the ends anchored to a support base associated with the linear motor with the rope from one anchor point passing about one reeve sheave



mounted on the reeve carrier supported by the pistons of the linear motor, and the end return sheaves at the end of the structure before being returned to the trolley sheave and about the hoist block and the rope from the other anchor point passing about the second reeve sheave on the reeve carrier supported by the pistons of the linear motor and about the diverter sheave before returning to pass about the end return sheaves at the opposite end of the structure and then to the second trolley sheave about the hoist block.

4,553,676

INSULATED CONTAINER

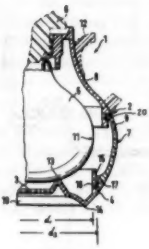
Anso Zimmermann, Bad Hersfeld, Fed. Rep. of Germany, assignor to Rotpunkt Dr. Anso Zimmermann, Bad Hersfeld, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 532,858, Sep. 16, 1983, abandoned. This application Jan. 24, 1984, Ser. No. 573,471

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1983, 8302563[U]; Dec. 29, 1983, 3347481

Int. Cl.[4] A47J *41/00*

U.S. Cl. 215—13 R **7 Claims**



1. An insulated container comprising:

an outer shell including a removable base, a predominantly convex portion and a predominantly non-convex portion, said convex portion being a lower section of said outer shell, and said convex portion and said non-convex portion meeting at a seam which is disposed substantially at a transition between convex and non-convex outer surface portions of said outer shell, said outer shell having a lower opening with a first diameter and in which said base is removably secured; and

an insulating insert having a convex configuration positioned in said outer shell and having a maximum diameter less than said first diameter so that said insulating insert is insertable into said outer shell through said lower opening prior to securing said base in said lower opening.

4,553,677

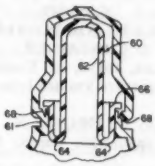
DILUTION BOTTLE

Herbert V. Shuster, Waban, Mass., assignor to Aseptic Technologies, Inc., Quincy, Mass.

Filed Jun. 8, 1984, Ser. No. 618,832

Int. Cl.[4] B65D *1/02*

U.S. Cl. 215—33 **7 Claims**



1. A dilution bottle for mixing sample material with a sterile diluent solution, said bottle comprising, in combination:

side wall portions of blow-moldable, synthetic polymeric material formed around the longitudinal axis of said bottle, a bottom wall of said polymeric material closing off one end of said bottle, and the opposite end of said bottle including an opening, at least one side wall portion of said bottle being formed with a protrusion extending into the interior of said bottle; and

means for sealing said opening of said bottle so as to maintain aseptic conditions within said bottle,

said means for sealing said bottle comprising an ancillary sterile stopper emplaced in said opening, and a seal formed of said plastic material integrally with said bottle and spaced from and encapsulating said stopper,

said stopper being shaped as an extended closed cylinder surrounded coaxially at one end thereof by a hemi-torus which in turn is surrounded coaxially by a disc-shaped rim, said cylinder, hemi-torus and rim being formed integrally of a resilient, liquid-impermeable material.

4,553,678

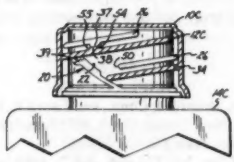
TAMPER INDICATING CONTAINER SAFETY COVER

Arden L. Thorsbakken, 931 Richard Dr., Apartment 9, Eau Claire, Wis. 54701

Filed Jun. 21, 1984, Ser. No. 623,033

Int. Cl.[4] B65D *55/02*

U.S. Cl. 215—218 **12 Claims**



1. A locking safety cap for closing a screw type container having a container thread of a container neck, said safety cap comprising:

cap means having internal screw threads dimensioned to mate with the external container threads, said cap means arranged for rotational movement about and longitudinal movement along the container neck axis; and

lock means comprising a removable ring assembly of size to fit within the cap means and having portions which engage portions of a neck of a container as the cap means is

tightened down, said ring assembly including at least one resilient projection having an end engageable with a surface of the cap and yielding in axial direction of the neck as the cap is tightened and engaging a surface of the cap to tend to extend axially and resist unscrewing motion of the cap as portions of the ring assembly react forces to portions of a container on which the cap is mounted, said projection being compressible by downward motion of the cap to a release condition and permit unscrewing motion.

4,553,679

INNER CLOSURE CAP FOR BOTTLE OR TUBE TYPE CONTAINER

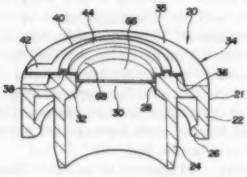
Yoshiharu Hatakeyama, Tokyo, and Yoshio Minosawa, Omiya, both of Japan, assignors to Yoshida Industry Co., Ltd., Tokyo, Japan

Filed May 18, 1984, Ser. No. 612,026

Claims priority, application Japan, May 25, 1983, 58-77475[U]

Int. Cl.⁴ B65D *41/00*

U.S. Cl. 215—232 **3 Claims**



1. An inner closure cap adapted to be tightly fitted to an open end of a neck portion of a container and covered by an outer closure cap engageable with the outer periphery of the neck portion, said inner closure cap comprising:

a cylindrical cap body having an upper surface and a pouring hole formed radially centrally of said upper surface, said upper surface having a flat portion and a ring formed at a position radially spaced from said pouring hole, said ring having a substantially rectangular cross section forming vertical sides; and

a sealing member for hermetically closing said pouring hole, said sealing member including a flat portion and a ring corresponding to and adhered to said flat portion and said ring, respectively, of said cap body, and said sealing member further including a stepped lower portion formed radially centrally of said sealing member at a position radially spaced from said ring of said sealing member, said lower portion being fitted in said pouring hole and having a vertical peripheral portion adhered to an interior surface of said cap body defining said pouring hole.

4,553,680

DISPLAY CASE

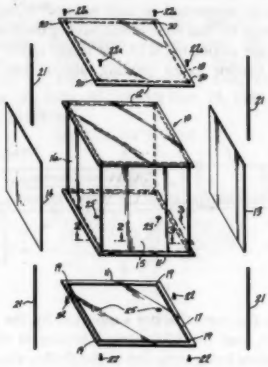
James S. Griggs, Branford, Conn., and Laura K. Lada-Mocarski, 123 York St., New Haven, Conn. 06510, assignors to Laura K. Lada-Mocarski, New Haven, Conn.

Continuation of Ser. No. 511,656, Jul. 7, 1983, abandoned. This application Aug. 23, 1984, Ser. No. 643,474

Int. Cl.⁴ B65D *6/00*

U.S. Cl. 220—4 F **6 Claims**

1. A demountable display case comprising upper and lower panels, at least said upper panel being transparent, a continuous groove of essentially rectangular shape defined in the facing surfaces of each of said upper and lower panels, first and second surfaces of each of said upper and lower panels, first and second pairs of rectangular transparent side panels, said first pair of side panels being dimensioned to fit in opposite sides of said groove and define two opposite sides of said case, said second pair of side panels being dimensioned to fit in the other opposite sides of said groove and define the other two opposite sides of said case, and four securing means at the corners of said grooves and compressively holding said side panels in said grooves in said upper and lower panels, said securing means



comprising rod-like members which substantially abut the vertical edges of said side panels, and means at each end of said rod members engaging said top and bottom panels said rod-like members being substantially the same dimension in diameter as the thickness of said side panels.

4,553,681

FUEL TANK FOR A MOTOR VEHICLE

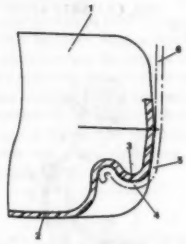
Jean Héaumé, Laval, France, assignor to Societe de Transformation des Matieres Plastiques, Laval, France

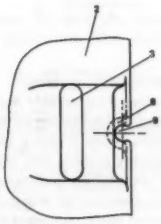
Filed Feb. 4, 1981, Ser. No. 231,324

Claims priority, application France, Feb. 4, 1980, 80 02411

Int. Cl.⁴ B65D *1/42, 90/12, 88/02*

U.S. Cl. 220—72 **7 Claims**





1. Fuel tank for a motor vehicle, which is intended to be suspended under the vehicle by means of suspension hooks, each suspension hook having a straight part and a curved head,

characterised in that its lower wall possesses, on its periphery, downwardly protruding bosses which permit the engagement of the curved head of the suspension hooks, its side wall possesses vertical grooves located at right-angles to the bosses, which can house the straight part of the suspension hooks, and the vertical grooves are profiled so as to permit the snapping-in of the straight part of the hooks.

4,553,682

BONDED CAN OF KEY-OPENING TYPE AND PROCESS FOR PRODUCTION THEREOF

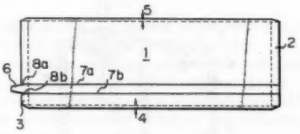
Michiko Tsurumaru, Tokyo; Seiichi Nakazato, Yokohama; Atsushi Nunokawa, Kawasaki; Hiroshi Ueno, Yokosuka, and Seishichi Kobayashi, Yokohama, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Apr. 9, 1984, Ser. No. 597,859

Claims priority, application Japan, Apr. 9, 1983, 58-61534

Int. Cl.[4] B65D *17/20*

U.S. Cl. 220—75 **14 Claims**



1. A bonded can of the key-opening type comprising a coated metal blank and a seam formed by lap-bonding outer and inner end edge portions of the coated metal blank to each other by a tape of a thermoplastic resin adhesive, wherein the adhesive is a polyamide type or polyester type adhesive, the inner end edge portion forming the seam of the bonded can is completely covered with the adhesive tape, the outer edge portion has a winding-starting tongue piece integrated therewith, a plurality of scores are formed on the outer surface of the coated metal blank from the base of the tongue piece along the entire circumference inclusive of the seam, the scores have a knife angle of 45° to 120° and a depth corresponding to 8 to 45% of the thickness of the metal blank, a coating of an epoxy resin having a thermal softening point of 65° to 150° C. as measured according to the thermomechanical method is formed at least at the seam-forming part on the outer surface and said epoxy resin coating forms a continuous layer adhering closely to the metal blank even in the portion of said scores.

4,553,683

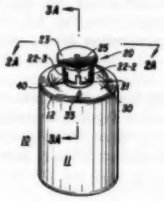
TAMPER RESISTANT CLOSURES

Joseph R. Paradis, 60 Plymouth Rd., Holden, Mass. 01520

Continuation-in-part of Ser. No. 441,557, Nov. 15, 1982, Pat. No. 4,462,505. This application Jul. 30, 1984, Ser. No. 635,409

Int. Cl.[4] B65D *41/02, 41/32*

U.S. Cl. 220—266 **19 Claims**



1. A tamper-proof closure comprising

a cap that is integrally sealed to a housing;

said cap having a body portion that extends above the level of the seal to said housing to provide a clear visual indication that the connection of the cap to the housing has not been disturbed;

a flange on said cap to facilitate the rupture of the seal connecting said cap to said housing and providing a clear visual indication of when the seal of the cap to the housing has been disturbed; and

means interconnecting said flange and said housing for stabilizing said seal against accidental rupture.

4,553,684

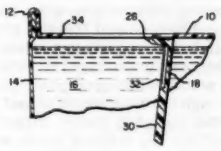
ONE PIECE PRESS AND LOCK TAB FOR CONTAINERS

Robert A. Bennett, 170 Sturbridge Rd., Easton, Conn. 06612

Filed Nov. 30, 1984, Ser. No. 677,072

Int. Cl.[4] B65D *41/32*

U.S. Cl. 220—268 **7 Claims**



1. A disc adapted to be placed in sealing engagement with the open top of a container and comprising:

a thin flat disc having a member disposed therein, said member being coplanar with the disc and constituting a tab, said tab having as a portion of its periphery a straight edge integral with the remainder of the disc, the remaining portion of said periphery being scored and defining a border; and

a horizontally elongated straight bar lying in an essentially vertical plane and being essentially parallel to said edge, said bar being integral with said tab and extending upward for a short distance, said bar after said scoring is broken being adapted to be moved into an essentailly horizontal plane in a position adjacent but below the disc with the tab projecting downwardly therefrom whereby an opening is formed in said disc, and is spanned by said bar, the length of said bar having such relation to said opening that each end of the bar extends beyond said opening to underlie the disc and lock the bar in said position whereby said tab is also locked in position.

4,553,685

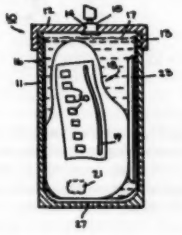
DISPENSING SYSTEM AND A REFILL POUCH

David J. Magid, Doylestown, Pa., assignor to Enviro-Spray Systems, Inc., New York, N.Y.

Continuation of Ser. No. 365,552, Apr. 5, 1982, Pat. No. 4,513,884. This application Dec. 21, 1984, Ser. No. 684,742

Int. Cl.[4] B65D *83/14*

U.S. Cl. 222—1 **18 Claims**



1. A method of using a pressurizable dispensing assembly

including a container with a receptacle chamber and an opening communicating with said chamber, closure means removably engageable with said container for closing said opening, and outlet means provided on said closure means for dispensing a flowable product from within said chamber, said method comprising the steps of:

removing the closure means from the container;

withdrawing, from the receptacle chamber of said container through the opening thereof, a first product-containing pouch at least partially emptied of product;

upon the completion of said step of withdrawing, inserting into said receptacle chamber through said opening a second product-containing pouch including therein a prepackaged flowable product to be dispensed, said second product-containing pouch being sealed and inflatable to define a liner within said container upon expansion therein of said second product-containing pouch, said second product-containing pouch further including therein a sealed expandable pressure-generating bag for exerting pressure on said prepackaged flowable product, said bag including therein first bag inflation means for expanding said bag to force said prepackaged flowable product from said second product-containing pouch and out of said container through the outlet means on said closure means, said bag further including therein triggering means for activating said first bag inflation means and second bag inflation means for generating additional bag expansion as said prepackaged flowable product is dispensed from said second product-containing pouch through said outlet means;

opening said second product-containing pouch to enable communication of said prepackaged flowable product held therein with said outlet means; and

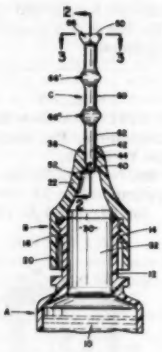
upon the completion of said steps of removing, withdrawing and inserting, reattaching said closure means to said container.

4,553,686

DROP DISPENSER

Delford O. Dougherty, Shaker Heights, Ohio, assignor to St. Luke's Hospital, Cleveland, Ohio

Filed May 17, 1984, Ser. No. 611,473
Int. Cl.[4] B65D *47/18*
U.S. Cl. 222—212 **2 Claims**



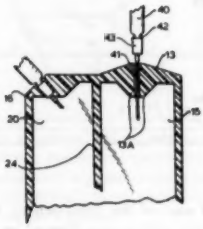
1. An eye drop dispensing arrangement for dispensing individual droplets, comprising in combination: a closed compressible plastic container; a cap member including means for securing said closure liquid-tight to said container; and an elongated dispenser tube extending from said cap member with a drop dispensing free end substantially spaced therefrom, said tube being formed of a resilient thermoplastic material having an outer diameter of about 0.042 inches and an inner wall surface defining a passageway communicating the interior of said container with said drop dispensing free end, the walls of said tube at said free end being permanently heat deformed on opposed sides of said tube by transverse depressions such that opposed portions of said inner wall surface abut along a linear interface to provide a normally closed, resilient, integral valve-like arrangement, said valve-like arrangement slightly opening when the pressure within said container increases a sufficient amount to cause yielding deformation of the deformed end to permit individual droplets to form and be dispensed.

4,553,687

NEEDLE BREAKING AND STORAGE DEVICE

Desira Harkins, 2854 Harmony Pl., La Crescenta, Calif. 91214, and Farid MuAddi, 370 Fairview, Arcadia, Calif. 91006

Filed Jan. 13, 1983, Ser. No. 431,682
Int. Cl.[4] B26F *3/00*
U.S. Cl. 225—93 **19 Claims**



1. A hypodermic needle breaking and storage device comprising:

a housing including a cavity for retention of severed hypodermic needles;

an opening in said housing for receiving the end of a hypodermic needle, said opening having a fixed diameter;

said housing including a surface against which said needle may be bent when in said opening to fracture said needle and separate the tip region from the remainder of the needle, and an internal surface surrounding the opening in the cavity, that internal surface being shaped and arranged to direct severed needle tips away from said opening;

said opening communicating with said cavity within the housing whereby the severed tip region of the needle may fall into said cavity after having been severed for retention therein.

4,553,688

TAG ATTACHING DEVICE

Akira Furutsu, Tokyo, Japan, assignor to Japan Bano'k Co., Ltd., Tokyo, Japan and Ben Clements & Sons, Inc., South Hackensack, N.J.

Continuation-in-part of Ser. No. 313,714, Oct. 21, 1981, abandoned. This application Feb. 13, 1984, Ser. No. 579,741
Claims priority, application Japan, Oct. 24, 1980, 55-148173
Int. Cl.[4] B25C *7/00, 5/06, 1/00*
U.S. Cl. 227—67 **3 Claims**

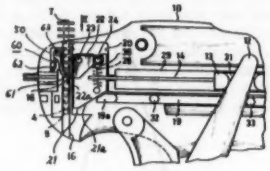
1. A tag attaching device for dispensing tag pins joined to a connecting bar from a tag pin assembly, each said tag pin having a head portion, a lateral bar portion, a filament portion coupling said head portion of said lateral bar portion and a joint portion coupling said tag pin to said connecting bar, comprising:

a main body;

an intermediate lever pivotally secured to said main body;

a first spring mounted between said intermediate lever and said main body and adapted to project a lever, which is pivotally secured to said main body through said interme-

diate lever, forwardly from a grip portion of said main body;
a slider loosely fitted to said intermediate lever and slidably mounted in said main body;
a cam driving member loosely fitted to said intermediate lever and disposed substantially parallel with said slider;
a driver fixed to said slider;
a hollow needle positioned ahead of a said driver and fixed to said main body;
a guide groove formed at the rear side of said hollow needle;



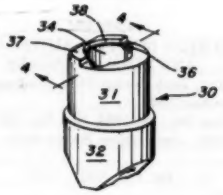
a cam plate disposed adjacent said guide groove so as to correspond to said cam driving member;
an engaging claw rockably mounted on said cam plate, said engaging claw having an end which engages intermediate adjacent joint portions of said tag pin assembly; and
a second spring mounted between said engaging claw and said main body and adapted to bias said cam plate downwardly and bias said engaging claw toward said hollow needle and said tag pin assembly.

4,553,689

STAPLE THROAT FOR STAPLING MACHINE

James W. Wilkerson, Highway 64 East, Savannah, Tenn. 38372

Filed Oct. 28, 1982, Ser. No. 437,346
Int. Cl.[4] B25C *5/02*
U.S. Cl. 227—139 **9 Claims**



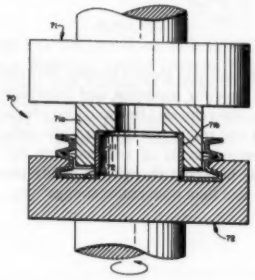
1. In a stapling apparatus including a frame, having a stapling station, an anvil in the stapling station for receiving a workpiece, an elongated flat staple driver, and means for reciprocally moving the staple driver toward and away from the anvil in the stapling station, a staple throat comprising:
(a) an elongated body member having an operative end portion and an opposite entry end portion,
(b) a longitudinal straight bore extending longitudinally through said elongated body member and opening through both said end portions,
(c) a pair of elongated opposed, parallel, coplanar guide slots in opposite sides of said bore extending the length of said bore and opening through both said end portions,
(d) the depth of said guide slots permitting the reception and passage of a staple of predetermined size longitudinally through said slots,
(e) the breadth of said guide slots being substantially less than the corresponding dimension of said bore normal to the plane of said guide slots,
(f) means fitting said body member in the frame of the stapling apparatus in the stapling station with said operative end portion opposing the anvil, said bore being in longitudinal alignment with the staple driver, and said slots receiving the opposite edges of the staple driver as the staple driver reciprocates through said bore, so that said body member, the staple driver and the anvil cooperate to drive a staple from the position between said guide slots to an operative position engaging the workpiece on the anvil.

4,553,690

CLUTCH ROTOR FOR AN ELECTROMAGNETIC CLUTCH AND METHOD OF MAKING THE ROTOR

Yasuo Nakamura, Gunma, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Jul. 8, 1983, Ser. No. 511,961
Claims priority, application Japan, Jul. 9, 1982, 57-119290
Int. Cl.[4] F16H *7/02;* **B21D** *53/26*
U.S. Cl. 29—159 R **3 Claims**



1. A method of making a clutch rotor for use in an electromagnetic clutch comprising the steps of:
(a) forming a cup-shaped blank with a generally cylindrical flange wall and bottom plate by bending a piece of sheet metal;
(b) forming at least one approximately V-shaped groove in said blank flange wall by holding the cup-shaped blank in a first die, pressing on the outer edge of the blank flange wall with a second die to form the approximately V-shaped groove within a confined space between a projection of the second die and a cup receiving depression of the first die;
(c) forming a final V-shaped groove by applying a roller working operation to said approximately V-shaped groove; and
(d) welding an inner cylindrical member to a radial inner surface of said bottom plate of said cup-shaped blank.

4,553,691

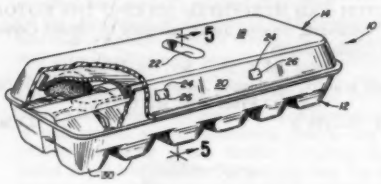
EGG CARTON ADAPTER

E. Donald Morando, Flossmoor, Ill., assignor to Queen Anne Candy Company, Hammond, Ind.

Filed Aug. 10, 1984, Ser. No. 639,625
Int. Cl.[4] B65D *5/50*
U.S. Cl. 229—2.5 EC **4 Claims**

1. An adapter for fitting within an egg carton to adapt the carton for containing in relatively snug fashion a plurality of candy pieces of substantially smaller size than conventional eggs for which the carton is designed, said egg carton being of the type having two longitudinal rows of a plurality of individual compartments which each receives an individual egg, said carton having a plurality of longitudinal and transverse divider walls to define said compartments, the adapter comprising, in combination, a first adapter part comprising a thin integral sheet of flexible material positioned within the inside of the top of said egg carton and having a center portion which forms a new top for the egg carton of reduced height as compared to the original carton top, and a second adapter part comprising

a thin integral sheet of flexible material positioned within the top of the carton base, said second adapter part being folded along two longitudinal fold lines to provide two inclined floors, one floor extending longitudinally along one row of said individual compartments and the other along a second row of said individual compartments, said two inclined floors being of a greater height than the original floors of said individual



compartments, and said second adapter part having a plurality of transverse slots for receiving said transverse divider walls therethrough, whereby said first and said adapter parts and the upper ends of said transverse divider walls define a plurality of individual compartments of reduced size for containing in relatively snug fashion a plurality of candy pieces of substantially smaller size than conventional eggs.

4,553,692

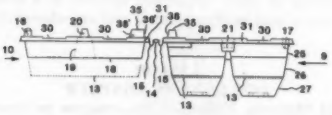
CONTAINER HAVING CLOSURE GUIDE MEMBERS

Pietro Padovani, Verona, Italy, assignor to Industrie Specializzate Articoli Plastici SpA, Parona, Italy

Filed Jun. 11, 1984, Ser. No. 619,350

Int. Cl.⁴ B65D *1/26*

U.S. Cl. 229—2.5 EC **17 Claims**



1. A container having closure guide members for eggs, fruit or like products, which container is constructed from a sheet of synthetic thermoplastics material and is formed of two portions held together by a flat spine and by two grooves binding the spine, and having recesses to house the products in at least one of the portions which have mating ledges and cylindrical spacers, the said portions being capable of being closed together by means of pressure closure members in such a way that the said mating ledges are in contact with each other, in which the closure guide members comprise a ramp made as a continuation of the grooves on the portions and a ramp on the spine, the ramps matingly engaging one another to align the two portions during closure of the container, and also in which additional spacers are provided and are of a height corresponding to the height of said cylindrical spaces.

4,553,693

BAG-SHAPED CONTAINER WITH A STRAW INSERT HOLE FORMED AND METHOD OF PRODUCING THE SAME

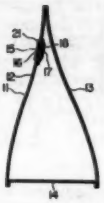
Yoshimi Terajima, Ebina; Hiroshi Akitoshi, Zushi, and Nobuaki Nagatani, Tokyo, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Jun. 7, 1984, Ser. No. 618,116

Claims priority, application Japan, Feb. 17, 1984, 59-21433[U]

Int. Cl.⁴ B65D *1/08*

U.S. Cl. 229—7 S **6 Claims**



1. A bag-shaped container with a straw insert hole formed thereon comprising;

a body having a straw insert hole formed thereon, said straw insert hole extending through the thickness of the body,

a first inside sealing piece adhered to the inner surface of the body to fully cover the straw insert hole,

a second inside sealing piece adhered to the inner surface of the body or to the area of the first inside sealing piece located offset from the straw insert hole to fully cover the first inside sealing piece, and

a tab disposed on the outer surface of the body, the central part of said tab being deformed into the straw insert hole to be adhered to the first inside sealing piece.

4,553,694

COIN COLLECTION BOX FOR AUTOMATIC CASHIERS AND COIN CHANGERS

Fritz Siegenthaler, Trub, Switzerland, assignor to Autelca AG., Gümligen, Switzerland

Filed Oct. 29, 1984, Ser. No. 665,558

Claims priority, application Switzerland, Nov. 18, 1983, 6206/83

Int. Cl.⁴ G07F *1/00*

U.S. Cl. 232—7 **10 Claims**

1. Coin collection box for automatic cashiers and coin changers, with a compartment ring (**1**) comprising compartments (**3**, **3***a*–**3***d*) formed between compartment walls (**4**) radially to the ring axis (**2**) and accommodating respectively one coin, this compartment ring being rotatable about the ring axis (**2**) in steps corresponding respectively to a compartment division (**a**) by means of a rotary drive mechanism (**13**, **14**) in opposite directions (**17**, **18**), and the compartments (**3**, **3***a*–**3***d*) of this ring being bounded along their periphery by annular

walls (6, 7, 19, 20) coaxial to the compartment ring (1), of which a first, fixed annular wall (19) has an inlet opening (23) leading from above into respectively one (3a) of the compartments (3), and a second, fixed annular wall (20, 21) has an outlet opening (24) extending at the bottom from one or several compartments (3b, 3d) offset with respect to this compartment (3a) in a ring rotation direction (17), characterized in that the wall (20, 21) of the annular walls on which drops a coin falling through the inlet opening (23) is inclined at least partially with respect to the inlet direction in such a way that this coin will not rebound into the inlet opening (23); and that the compartment walls (4) exhibit protuberances (34) limiting their contact with a coin to such a small area that the coin cannot stick to the compartment walls (4); and that at least one of the rims of the outlet opening (24) extending transversely to the direction of rotation (17, 18) of the compartment ring exhibits a rib (35) which latter lifts the coins during rotation (17, 18) of the compartment ring (1) prior to reaching the outlet opening (24).

4,553,695

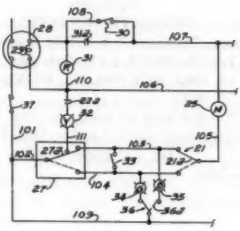
AUTOMATIC DAMPER MEANS FOR AIR DUCTS

Willie T. Grant, 400 S. Simms St., Lakewood, Colo. 80228

Filed Jan. 4, 1984, Ser. No. 568,057

Int. Cl.⁴ F24F *13/10*

U.S. Cl. 236—9 A **4 Claims**



1. Automatic damper means having rotatable damper means controlling and regulating the flow of a heating/cooling medium through duct means, said duct means being part of a central heating/cooling system of a residence or like structure; said duct means transporting said heating/cooling medium to a plurality of rooms or zones of said residence or like structure; said heating/cooling means being energized concurrently with said automatic damper means by a plurality of thermostatic means; said automatic damper means comprising:

(a) operating means, said operating means having motor means and switch means; said motor means having external shaft means engaging switch operating means and said damper means; said switch means comprising a first manual switch interconnecting said fuel control means with a plurality of said thermostatic means; a second manual switch bypassing said thermostatic means and energizing said motor means independently of said thermostatic means; an automatic hold-in switch interconnecting said thermostatic means and said motor means, preventing said motor means from deenergizing until said damper means has reached a fully open or closed position when said motor means are being controlled by said thermostatic means, a second automatic switch interconnecting said thermostatic means and said motor means, said second automatic switch controlling said motor means in response to said thermostatic means; said switch operating means actuating said hold-in switch and said second automatic switch;

(b) support means, said support means comprising engaging means, said engaging means occupying a circumferential position about a portion of said duct means, said engaging means having bracket means attaching thereto; said engaging means supporting said damper means and said bracket means; said bracket means supportedly engaging said automatic switch means and said motor means;

(c) control means, said control means comprising said thermostatic means providing an electrical interlock between said fuel control means, said switch means and said motor means; said motor means operating said damper means; relay means and high temperature thermostatic means, said relay means and high temperature thermostatic means electrically interconnecting said fuel control means and motor means to maintain a last operable damper means in an open position after said fuel control means deenergizes; indicating means electrically interconnecting said thermostatic means, said motor means, said relay mean, and said fuel control means, said indicating means communicating a current operation 21 status of said damper means and said fuel control means.

4,553,696

AIR CONDITIONING APPARATUS

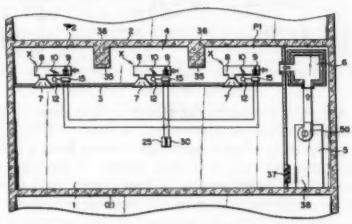
Isamu Ichikawa, Kashiwa; Yutaka Fukushi, Sagamihara; Keiji Kamata, Yamato, and Hikoshiro Suzuki, Sagamihara, all of Japan, assignors to Topre Corporation, Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 430,376

Claims priority, application Japan, Apr. 28, 1982, 57-62520[U]

Int. Cl.⁴ F24F *7/00*

U.S. Cl. 236—49 **11 Claims**



1. An air conditioning apparatus comprising:

a ceiling board for defining the ceiling of a room to be air conditioned;

a slab provided in a predetermined space above said ceiling board, said ceiling board and said slab forming a double ceiling structure, the space between said ceiling board and said slab defining a supply chamber;

air conditioning means for conditioning air passing therethrough;

communicating means provided in said ceiling board for communicating said supply chamber with said room, said communicating means having a plurality of through holes formed at said ceiling board;

circulating means for passing the air in said room through said air conditioning means and returning the air in the room through said supply chamber into the room through said plurality of through holes;

ducts provided corresponding to the respective through holes in said supply chamber, each connected at one end thereof to the corresponding through holes and at the other end thereof into said supply chamber;

air quantity detecting means provided in said respective ducts for detecting the air quantity in the respective ducts;

throttle means provided at the downstream side of said air quantity detecting means and movably supported to vary the opening extent of said ducts for adjusting the air quantity of the air flowing through the ducts;

drive means connected to said respective throttle means for driving said throttle means;

a plurality of control means each connected to a respective one of said drive means for driving said drive means based on

detected air quantity by said air quantity detecting means so that the corresponding throttle means having controlled apertures in their respective ducts; and

a first setter provided in said room and connected to the respective control means for setting the air quantities in the respective ducts to desired values.

4,553,697

SYSTEM FOR SUPPLYING MOTOR VEHICLE DIESEL ENGINES WITH FUEL

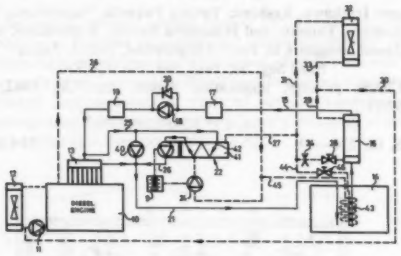
Michael Nothen, Ascholding, and Erhard Bartsch, Nersingen, both of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Fed. Rep. of Germany

Filed Feb. 24, 1984, Ser. No. 583,403

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1983, 3308891

Int. Cl.⁴ B60H *1/02*; F02N *17/02*

U.S. Cl. 237—12.3 B **25 Claims**



1. A system for supplying motor vehicle diesel engines with fuel, having a fuel circulation system loop, said fuel circulation loop comprising a fuel supply pipe leading from a fuel tank, via preliminary and fine mesh fuel filters, to an injection pump driven by the diesel engine; a fuel return pipe leading back from the injection pump to the fuel tank; a fuel-circulating pump that is operable independent of the operator of the diesel engine; and a heat exchanger for causing heat exchange between the fuel flowing through the fuel supply pipe and a liquid heat-transfer medium; wherein the fuel-circulating pump is drivable by an on-board power supply source, when the diesel engine is stopped, and the fuel system loop is arranged in such a way that, when the fuel-circulating pump is operated with the engine stopped, said fuel circulation system is flushed over its whole length by fuel circulated by the fuel-circulating pump, through the fuel supply pipe, heat exchanger, preliminary and fine-mesh fuel filters, return pipe, and fuel tank.

4,553,698

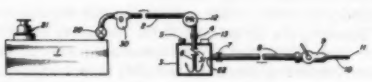
PNEUMATIC PESTICIDE DUSTER FOR TREATMENT OF STRUCTURES

Richard L. Parker; Richard J. Swords, and Larry E. Griffin, all of Ponca City, Okla., assignors to Parker Pest Control, Ponca City, Okla.

Filed Feb. 7, 1983, Ser. No. 464,369

Int. Cl.⁴ B05B *5/08, 7/14*

U.S. Cl. 239—3 **10 Claims**



1. An improved method for treating structures with pesticide dust by placing said dust into pest harborages within said structures, the improvement comprising closely controlling the distribution of said dust within said harborages by imparting a friction induced electrostatic charge to said dust to mutually repel and suspend said particles while electrostatically attaching said particles to the structure and pests therein, wherein the dust is applied by

(a) placing pesticide dust in a dust reservoir having attached thereto an air input aperature connected to a source of pressurized air and a dust/air mixture outlet aperture connected to

(b) a manually operated valve regulating the flow of dust/air mixture, and

(c) a metallic tube downstream of said valve capable of imparting a friction induced electrostatic charge to discharged dust, said tube having an opening up to about ⅛ inch, and

(d) a flexible tube attached at one end to said air input aperature within said dust reservoir vessel, and having a free end depending within said reservoir vessel, such that air/dust mixture released by actuating said valve allows air to enter the dust reservoir from the pressurized air source through said flexible tube, said tube being agitated by the incoming air exiting through the free end of said flexible tube and directing said air throughout said reservoir such that substantially all dust is entrained by said air and forced through the exit aperature when the valve of (b) is actuated.

4,553,699

IRRIGATION SYSTEM

Alvar Bengtsson, Pilevägen 4, S-237 00 Bjärred, Sweden

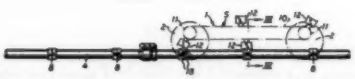
PCT No. PCT/SE82/00174, § 371 Date Jan. 14, 1983, § 102(e) Date Jan. 14, 1983, PCT Pub. No. WO82/03964, PCT Pub. Date Nov. 25, 1982

PCT Filed May 14, 1982, Ser. No. 460,236

Claims priority, application Sweden, May 18, 1981, 8103079

Int. Cl.⁴ B05B *3/00*

U.S. Cl. 239—183 **6 Claims**



1. An irrigation system comprising a self-propelled carriage provided with drive wheels and a fluid motor for driving said drive wheels, a pipe-line which is laid on the ground and along which the carriage is movable, a transfer unit connected to said carriage and moved together therewith, said transfer unit being adapted to transfer water from said pipe-line to said fluid motor and to ground to be irrigated, said pipe-line being provided on its outer surface with a plurality of clamp means spaced apart equidistantly along the length of said pipe-line, each clamp means having cooperable parts that embrace the outer surface of the pipe-line and having a valve extending through the pipe-line wall, said transfer unit having endless chain means passed over spaced guide pulleys and forming elongated loop means with a lower elongated side of said loop means parallel to said pipe-line at a constant height above said pipe-line, said chain means carrying, at intervals corresponding to the spaces between successive clamp means, connectors which are successively moved into alignment with said clamp means, each connector being provided with an actuator which opens the valve of a clamp means aligned with the connector, each connector having a cup open outwardly from said chain means and provided at an outer edge with a seal for sealing the connector against the pipe-line, said cups extending downwardly from said lower elongated side of said loop means and being stationary relative to said pipe-line while sealed against the pipe-line and while the carriage moves along the pipe-line, and said cups being interconnected hydraulically with each other and with said fluid motor, said carriage and said pipe-line

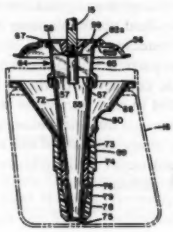
having cooperable means for guiding said carriage along said pipe-line.

4,553,700

CENTRIFUGAL SPRAYER HAVING HOLLOW CONE FEEDER

Irving F. Snyder, Minneapolis, and Duane A. Luebeck, Blaine, both of Minn., assignors to Polaris Home Systems, Inc., Minneapolis, Minn.

Filed Mar. 19, 1984, Ser. No. 590,769
Int. Cl.⁴ B05B *3/10*
U.S. Cl. 239—215 **4 Claims**



1. A centrifugal sprayer of the type having a disc member attached to a rotatable drive member proximate the top of a liquid container which is itself attachable to a housing enclosing the rotatable drive member, comprising

(a) a hollow cone member attached to said rotatable drive member in spaced relation to said disc, to provide an annular gap therebetween, said cone member having a conical interior surface with an opening positioned proximate the bottom of said container, said cone member further having an exterior cylindrical surface section segment; and

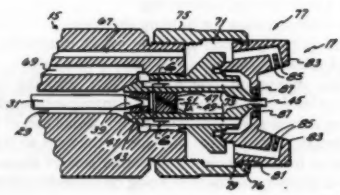
(b) an outer funnel-shaped housing supported in said container, said housing having an upper cone shaped portion encircling said hollow cone member in spaced relationship, and having an interior cylindrical surface section segment in at least partial alignment with said cone member exterior cylindrical surface section segment, and having a lower internal surface closely fitted to said cone member, whereby during rotation of said cone member bearing surfaces are formed between said aligned cylindrical surfaces.

4,553,701

FOAM GENERATING NOZZLE

William R. Rehman, Vermillion, and James C. Smith, Lorain, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Oct. 22, 1982, Ser. No. 436,012
Int. Cl.⁴ B05B *7/06*
U.S. Cl. 239—432 **9 Claims**



1. A nozzle assembly for converting a liquid/gas solution into a foam, the gas being maintained under pressure in solution in the liquid, said nozzle assembly comprising:

chamber means including an obstruction for receiving the liquid/gas solution and causing the gas to leave solution and form a foam, said chamber means having a pressure lower than that required to maintain the gas in solution in the liquid;

a discharge orifice communicating with said chamber means;

delivery means including an inlet passageway communicating with said chamber means for directing the liquid/gas solution to said chamber means while maintaining the gas in solution;

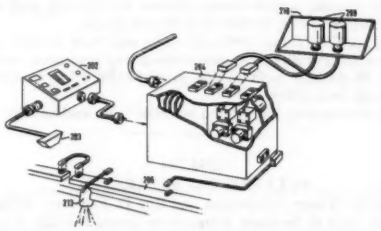
said inlet passageway directing the liquid/gas solution into said chamber means and into engagement with said obstruction to agitate the liquid/gas solution, the agitation of the liquid/gas solution within said chamber means inducing the gas to leave solution and form a foam within said chamber means, said foam thereafter being emitted from said chamber means through said discharge orifice.

4,553,702

SPRAYING SYSTEM

Ronald A. Coffee, Haslemere; Peter C. Bennett, Churt; Leonard E. Houghton, Petworth; Graham C. Johnson, Hindhead; John A. Sommerville, Cirencester; Peter H. Boyce, Dorchester, and William J. P. Currall, Swindon, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Feb. 4, 1983, Ser. No. 463,938
Claims priority, application United Kingdom, Feb. 5, 1982, 8203420; Feb. 5, 1982, 8203395
The portion of the term of this patent subsequent to Aug. 28, 2001, has been disclaimed.
Int. Cl.⁴ B05B *5/08*
U.S. Cl. 239—690 **17 Claims**



1. A modular fluid spraying system comprising:

at least one fluid container for supplying fluid to be sprayed having a fluid outlet port;

at least one fluid pumping means having a fluid inlet port and a fluid outlet port;

said fluid outlet port of the container being plug connectable with the fluid inlet port said pumping means;

a plurality of boom sections being third plug connectable with each other and with the fluid outlet port of the pumping means;

at least one sprayhead assembly detachably securable and fluid plug connectable to at least one of said boom sections; and

at least one electronic data processing circuit electrically plug connectable to the system and pre-set to regulate at least one electrically responsive operating parameter of the system when in use;

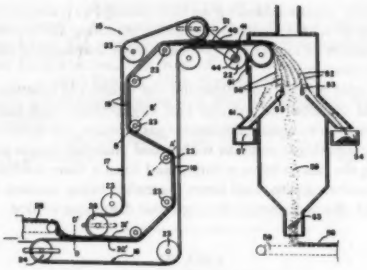
different containers and boom sections thereby being plug connectable within said system so as to readily achieve different system configurations of fluid delivery and sprayed area.

4,553,703

MACHINE AND PROCESS FOR GRINDING GRANULAR PARTICLES

Raul M. Villarreal, Privada Cervantes #150 Col., Obispado Monterrey, N. L. 64010, Mexico

Filed Feb. 23, 1984, Ser. No. 582,814
Int. Cl.[4] B02C *19/00*
U.S. Cl. 241—24 **6 Claims**



1. A grinding process comprising the steps of

providing a grinding cavity formed between two opposed flexible continuously movable belts which are in contact with each other at least along their transverse edges forming a tubular like spill free conveyor, adjusting said belts relative to each other to form a cavity of predetermined size based on the type of granular particles to be ground,

grinding said particles by imparting a rotating action upon the outer surface of the particles while the particles are in said cavity,

said rotating action causing said particles to rub and grind against each other and said belts to a predetermined condition,

said rotating action being effected by moving said belts relative to one another at different speeds,

said particles being conveyed along said belts without spillage in any direction and without any undesired contact with foreign surfaces due to said belts being in contact with each other,

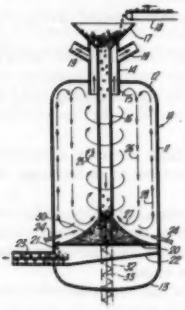
and discharging the ground material from said cavity.

4,553,704

PULVERIZING APPARATUS

Robert R. Wilson, Kilmacolm, and Roy D. Falconer, Bridge of Weir, both of Scotland, assignors to James Howden & Company Limited, Glasgow, Scotland

Filed Feb. 21, 1984, Ser. No. 581,109
Int. Cl.[4] B02C *19/06*
U.S. Cl. 241—39 **5 Claims**



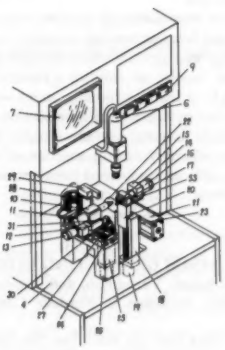
1. Pulverizing apparatus comprising a generally cylindrical vessel, a plurality of circumferentially spaced fluid injection nozzles each angled between a radius of the cylindrical vessel passing through the nozzles and a direction perpendicular to said radius, to inject fluid into the vessel and induce an axially flowing vortex in the vessel having its axis generally centrally of the vessel, transverse wall means is said cylindrical vessel, a generally axially extending feed tube passing through the transverse wall means for feeding the material to be pulverized into said vessel, said feed tube extending to a point in said vessel effective to feed the material to a point adjacent the axial center of the vessel in the vicinity of said nozzles, said transverse wall means being positioned at a location remote from the nozzles to intercept the vortex and to deflect a portion of the fluid medium and entrained particles of material to effect a recirculation of the fluid medium within the vessel and thus to form a curtain surrounding the vortex, whereby the material is pulverized by interparticle collisions and the curtain reduces high speed particle contact with the cylindrical wall of the vessel, and an outlet in said transverse wall through which a fraction of the pulverized material below a predetermined mass will pass generally along the axis of the vortex, said feed tube passing through said outlet in the transverse wall, so that the outlet is thus made annular.

4,553,705

TOROIDAL CORE WINDING METHOD AND APPARATUS

Yoshihisa Uchida, Neyagawa, and Kazuichi Yamashita, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

PCT No. PCT/JP82/00235, § 371 Date Feb. 16, 1984, § 102(e) Date Feb. 16, 1984, PCT Pub. No. WO84/00077, PCT Pub. Date Jan. 5, 1984
PCT Filed Jun. 18, 1982, Ser. No. 584,438
Int. Cl.[4] H01F *41/08*; B65H *81/02*; G11B *5/42, 5/20*
U.S. Cl. 242—4 R **3 Claims**



2. An apparatus for winding a wire onto a toroidal core having a hole therein, comprising:

core holding means for holding the core;

a wire gripping means operable for alternatively gripping and releasing the wire;

moving means on which said wire gripping means is mounted for moving said wire gripping means while gripping the wire for inserting the tip of one end of the wire through the hole from one side of the core so that it protrudes from the hole on the other side of the core, said wire gripping means then being operable for releasing the wire upon completion of the inserting;

a wire drawing out means for gripping the end of the wire protruding from the hole on the other side of the core and

drawing the wire through the hole and out from the core until said drawing out means reaches a drawn out position;

said moving means including means for moving said gripping means from the position on the one side of the hole of the core at which the wire has been released to the other side of the core and to a gripping position spaced predetermined distance toward the core from said drawn out position, said gripping means then being operable for gripping the wire at said gripping position; and

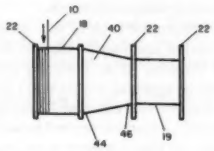
a cutting means for cutting the wire gripped by said gripping means at said gripping position at a point which is portion of said predetermined distance from said drawn out position, said moving means including means for moving said gripping means from said gripping position to again insert the wire through the hole of the core.

4,553,706

LIGHTGUIDE FIBER SPOOL CHANGEOVER TECHNIQUE

Ralph E. Frazee, Jr., Brick Township, Ocean County, and David H. Smithgall, Sr., East Windsor Township, Mercer County, both of N.J., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Jun. 25, 1984, Ser. No. 623,900
Int. Cl.[4] B65H *67/056*
U.S. Cl. 242—18 A **8 Claims**



1. A method for dynamically transferring a strand of material from a full, rotating, take-up spool of strand material to an empty, rotating, take-up spool, axially aligned therewith, comprising the steps of:

delivering the strand to a take-up spool at a substantially constant linear velocity to fill said spool;

rotating the full and empty spools along with a tapered transition section axially interposed therebetween, at the same rotational velocity;

winding the strand along the tapered section, from the greater to the smaller cross-sectional diameter thereof, while simultaneously increasing the rotational velocities of the spools and the tapered transition section; and

transferring the strand from the tapered transition section onto the empty spool when the strand is at the diameter of the taper equal to the diameter of the empty spool.

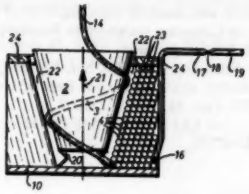
4,553,707

PROCESS FOR WINDING WIRE UPON A REEL

Werner Henrich, Am Wachtgipfel, D-6349 Hörbach, Fed. Rep. of Germany

Filed Dec. 1, 1980, Ser. No. 211,907
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948241
Int. Cl.[4] B65H *54/04, 54/28, 55/04, 49/02*
U.S. Cl. 242—25 R **18 Claims**

1. In a process for winding wire upon a reel and the like, the steps of winding a wire in conical layers upon a conical core of a reel until a predetermined outer diameter of a wound package is reached, and subsequently winding the wire in layers of



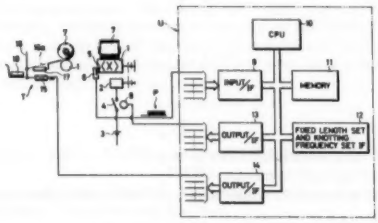
decreasing lengths to form a wound package having an outer cylindrical shape of the predetermined diameter.

4,553,708

DEFECTIVE PACKAGE SELECTOR FOR WINDERS

Isamu Matsui, Kyoto, and Yutaka Ueda, Nara, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

Filed Nov. 1, 1982, Ser. No. 438,333
Claims priority, application Japan, Nov. 2, 1981, 56-175889
Int. Cl.[4] B65H *63/02*
U.S. Cl. 242—36 **4 Claims**



1. A defective package selector for a yarn winding apparatus, the apparatus of the type having a rotating yarn package being wound with a fixed, predetermined length of yarn, the selector comprising:

pulse signal producing means for producing a pulse signal in response to detection of a knotting operation, the pulse signal producing means including a rotatable body contacting the rotating yarn package and sensor means for generating a pulse signal each time the rotatable body makes a revolution,

a defective package selector control unit for receiving the pulse signals generated by the sensor means and determining and storing a value representing the number of yarn knots on the package being wound based on the number of pulse signals generated during yarn winding on the package, comparing the stored value of the number of yarn knots on the package with a preset number of yarn knots per the predetermined length of yarn, and producing a defective package signal when the stored value of the number of yarn knots on the package exceeds the preset number of yarn knots, and

a processing unit responsive to the defective package signal from sdid control unit for sorting out and processing doffed packages separately as normal and defective packages.

4,553,709

YARN ACCUMULATOR

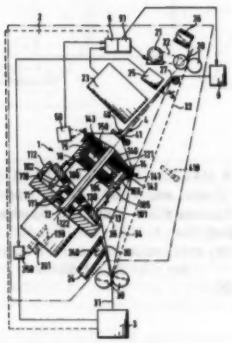
Erich Bock, Wettstetten; Kurt Lovas, Böhmfeld; Johann-Christian Promoli, and Joachim Dämmig, both of Ingolstadt, all of Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Oct. 12, 1983, Ser. No. 541,289

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1982, 3238376; Oct. 16, 1982, 3238375

Int. Cl.[4] B65H *51/00*; D01H *1/00*

U.S. Cl. 242—47.01 43 Claims



1. A yarn accumulator comprising:

(a) a rotary drive means;

(b) an accumulator roller driven by said rotary drive means having a rotary axis;

(c) a feed end formed on one end of said accumulator roller and an exit end formed at a distal end of said accumulator roller;

(d) a yarn feed station for feeding yarn substantially tangential to said feed end of said accumulator roller;

(e) a rotatable yarn restraining element carried at said exit end of said accumulator roller;

(f) said yarn restraining element being rotatable relative to said accumulator roller;

(g) yarn guide means arranged in prolongation of said rotary axis of said roller accumulator;

(h) said yarn being unwound from said accumulator roller through said yarn guide and counter to the movement of said yarn restraining element;

(i) said yarn restraining element including a radially outwardly extending open yarn restrainer for engaging yarn lying in a prescribed path at an angle to said axis of said accumulator roller; and

(j) said yarn guide means having a standby position and a closed yarn guiding position, said yarn guide being movable for engaging said yarn lying in said prescribed yarn path when moving from said standby position to said closed yarn guiding position causing said yarn in said prescribed path to be caught and deflected by said radially extending open yarn restrainer and wound about said roller accumulator.

4,553,710

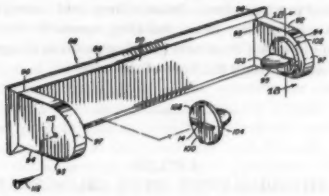
ROLL HOLDING FIXTURE

Daniel L. Pool, Phoenix, Ariz., assignor to PC Manufacturing Corporation, Phoenix, Ariz.

Continuation-in-part of Ser. No. 357,624, Mar. 12, 1982, abandoned, which is a continuation-in-part of Ser. No. 205,233, Nov. 10, 1980, abandoned. This application Aug. 16, 1983, Ser. No. 523,434

Int. Cl.[4] B65H *19/04*

U.S. Cl. 242—55.2 10 Claims



1. A fixture for attachment to a surface and for rotatably holding a roll of coiled sheet material, which roll includes a hollow core, a generally cylindrical outer surface, and a pair of spaced apart ends, such fixture comprising:

a. a base securable to said surface;

b. a pair of support members carried by said base and spaced apart to receive the ends of said roll therebetween;

c. a pair of opposed support elements;

d. pivot means connecting each of said support elements to a respective one of said pair of support members for pivotal rotation between (i) an inwardly extending normal first position to be received within said roll to support said roll along a support axis extending between said support members, and (ii) a separable second position for receiving the end of said roll therebetween in response to urging of said roll to move therebetween, said pivot means extending along an axis substantially perpendicular to the support axis of said roll and selectively angularly positionable relative the plane of said base; and

e. a carrier element carried by each of said pair of support members, each said carrier element being selectively rotatably positionable relative said support axis and pivotably carrying a respective one of said pair of support elements.

4,553,711

MODULAR HOLDER FOR ROLLS

Kenard E. Urion, Gloucester County, N.J., and Peter Bressler, Philadelphia County, Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Jun. 21, 1984, Ser. No. 623,186

Int. Cl.[4] B65H *19/04*

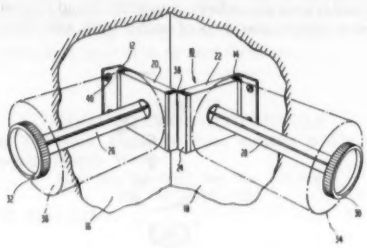
U.S. Cl. 242—55.3 15 Claims

1. A modular roll product holder comprising:

(a) first and second panels, each panel having an edge that includes a flange-shaped element;

(b) a hinged connector having two panel receiving elements separated by a hinge, each panel receiving element having a groove that mates with the flange-shaped element, whereby each panel can be removably secured to the

connector, the hinge allowing the first and second panels to be connected together at different angles; and



(c) first and second roll support means having one end secured respectively to the first and second panels.

4,553,712

FEEDING WEB MATERIAL

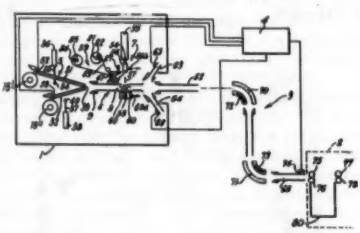
Wladyslaw H. Krywiczanin, Fairoak, and William Lumsden, Winchester, both of England, assignors to British-American Tobacco Company Limited, London, England

Filed Dec. 8, 1981, Ser. No. 328,672

Claims priority, application United Kingdom, Dec. 22, 1980, 8041062

Int. Cl.⁴ B65H *19/18, 21/00;* **B31F** *5/06*

U.S. Cl. 242—58 **7 Claims**



1. Apparatus for supplying web material from reels thereof to a web-utilising machine, comprising a reel changer including a reel store, means operable to advance reels in said store in succession to a reel-unwinding location, a web-transport system having an outlet end and means operable to feed and guide to the machine a web extending in a web path from a reel at the said unwinding location, which system comprises at least one air mover, means to supply air under pressure to the said air mover, means operable to sense the absence of web from a portion of the extent of the transport system and control means responsive to signals from said sensing means to activate air-supply to said air mover, wherein the web path of the transport system includes at least one curved portion defined by an air being and comprising means operative to supply air to the said air bearing when the web is running through the transport system but not to the air mover and when a web end is advanced to the air mover air is supplied to said air mover but not to said air bearing, whereby said leading end of a web length extending from a said reel can be fed to the outlet end of the said system.

4,553,713

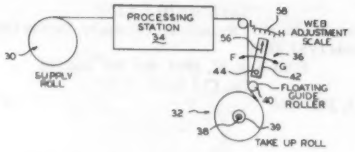
COIL WINDING CONTROL GUIDE

Richard M. Hecht, Chicago, and Robert G. Seaverns, Northbrook, both of Ill., assignors to Gasway Corporation, Chicago, Ill.

Filed Jun. 21, 1983, Ser. No. 506,301

Int. Cl.⁴ B65H *23/16*

U.S. Cl. 242—78.1 **5 Claims**



1. A guide system for a web which is wound into a coil having an increasing diameter, said guide system comprising an elongated generally vertical supporting arm extending across and adjacent an approximate radius of said coil, linear bearings comprising at least one guide rail extending longitudinally along the length of said support arm and at least one sliding bearing riding on said guide rails, rotatable guide roller means mounted on said sliding bearing for guiding and directing a web onto said coil in tangential alignment with the circumference thereof, the incoming web entering from a point above the supporting arm and moving down and under the guide roller and the outgoing web leaving the guide roller to be wound on the circumference of a coil which is below the guide roller, said incoming and outgoing web forming an obtuse angle which varies as a function of the instantaneous diameter of the coil, and means responsive to tension in the web applied to said guide roller along the sides of said angle for positioning said guide roller along said supporting arm so that said varying obtuse angle continuously urges said sliding bearing to a position which maintains the position of said guide roller at a substantially constant distance from the periphery of said coil as said diameter increases.

4,553,714

FISHING REEL WITH A VARIABLE PRESSURE CLICK PAWL

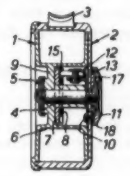
Raymond Humble, Alnwick, England, assignor to Hardy Bros (Alnwick) Ltd., Alnwick, England

Filed Aug. 15, 1983, Ser. No. 523,458

Claims priority, application United Kingdom, Aug. 16, 1982, 8223516

Int. Cl.⁴ A01K *89/02*

U.S. Cl. 242—84.1 R **7 Claims**



1. A fishing reel including a rotatable drum (1) having a central axis (4) of rotation and a cage (2) carrying the drum and having a check mechanism comprising a check wheel (7) having radially disposed teeth (8) projecting in a direction parallel to said axis (4) of rotation, a check tongue (12), a pivotal connection pivotally connecting said tongue to said reel at a position spaced axially from said axis (4) for pivotal movement in opposite directions to engage said teeth upon rotation of said check wheel in opposite directions, said tongue (12) extending from said pivotal connection in a direction parallel to said axis

(4) of rotation for engagement with the teeth (8), said pivotal connecting of said tongue (12) having a pivot axis at a right angle relative to said central axis (4); and biasing means for biasing said tongue in both directions of pivotal movement about said pivotal connection and into engagement with said teeth in both directions of rotation of said wheel.

4,553,715

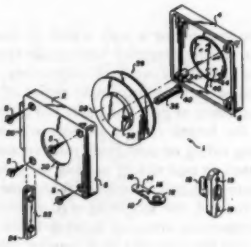
EXTENDIBLE LINE

Federico Roselli, 6961 Russell Ave., Burnaby, British Columbia, Canada (V5J 4R8)

Filed Aug. 31, 1984, Ser. No. 646,701

Int. Cl.⁴ B65H *75/38*

U.S. Cl. 242—100 **5 Claims**



1. A device to store and pay out a line comprising:
a casing;
a reel located in the casing and having an open side;
a plurality of discrete projections on the housing to engage the open side of the reel to guide the reel, the discrete projections extending radially inwardly of the casing;
means to locate the line on the reel;
an opening in the casing through which the line can pass;
a handle in the reel movable from an outward position to a retracted position, the outward position enabling rotation of the reel to wind or unwind the line and the inward position enabling the handle to abut the projections within the casing to stop rotation.

4,553,716

MECHANISM IN ROLL-UP DEVICE FOR SAFETY BELTS IN MOTOR VEHICLES

Wolf-Dieter Hönl, Böbingen, Fed. Rep. of Germany, assignor to REPA Feinstanzwerk GmbH, Aldorf, Fed. Rep. of Germany

Continuation of Ser. No. 468,979, Feb. 23, 1983, abandoned. This application Oct. 9, 1984, Ser. No. 659,028

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1982, 3206627

Int. Cl.⁴ A62B *35/00;* **B65H** *75/48*

U.S. Cl. 242—107.7 **6 Claims**

1. A safety belt retractor assembly having a belt reel which is rotated to retract the safety belt, said retractor assembly comprising a ratchet wheel connected with the belt reel and having a circular array of teeth, a control pawl having an end portion movable into engagement with the circular array of teeth on the ratchet wheel to prevent retraction of the safety belt, and control means for blocking engagement of said control pawl with said ratchet teeth during retraction of a substantial length of the safety belt and for enabling said control pawl to engage said ratchet teeth upon withdrawal of a short length of the safety belt from the reel, said control means including a first control member having a circular blocking surface means for engaging said end portion of said pawl to block engagement of said pawl with said circular array of teeth on said ratchet wheel during retraction of a substantial length of the safety belt, said blocking surface means at least partially circumscribing said ratchet wheel and being disposed radially outwardly of and in axial alignment with said circular array of ratchet teeth, said first control member having a circular inner side surface which at least partially circumscribes said ratchet wheel and is disposed radially outwardly of and in axial alignment with said circular array of ratchet teeth, said first control

member having an opening extending between said blocking surface means and said inner side surface, said opening being disposed radially outwardly of and in axial alignment with said circular array of ratchet teeth, said end portion of said pawl being movable through said opening to engage said ratchet teeth upon withdrawal of a short length of the safety belt.

4,553,717

RECORDING TAPE CARTRIDGE

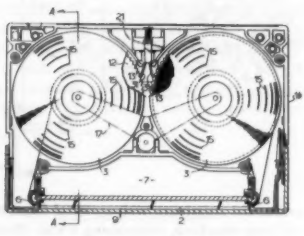
Hiroyoshi Takagi, Kameoka, Japan, assignor to Hitachi Maxell, Ltd., Osaka, Japan

Filed Dec. 13, 1983, Ser. No. 560,870

Claims priority, application Japan, Dec. 14, 1982, 57-189807[U]

Int. Cl.⁴ G03B *1/04;* **G11B** *15/32*

U.S. Cl. 242—198 **8 Claims**



1. A recording tape cartridge which comprises a bottom section, a top section assembled with the bottom section to form a case body, at least one tape reel accommodated in said case body with a recording tape wound therearound, each of said tape reels having at least one flange with its peripheral edge formed as engaging teeth, an opening defined in the bottom section for allowing entrance of a tape reel releasing member provided on a tape recording apparatus and tape reel braking means for preventing rotation of said tape reel when said recording tape cartridge is not in use, said tape reel braking means comprising a pair of guide wall projections formed at both sides of said opening in said bottom section forming a space therebetween, a stopper member having at least one braking member for engagement with any one of the teeth of said tape reel and being guided by said guide walls so as to move between a first position where said braking member can engage at least one of the engaging teeth of said tape reel for

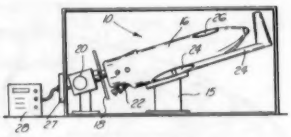
preventing rotation of said tape reel and a second position where said braking member is disengaged from said teeth to allow rotation of said tape reel, means for resiliently biassing said stopper member toward said first position and an engaging means for preventing disengagement of said stopper member from said guide walls in an upward direction.

4,553,718

NAVAL HARRASSMENT MISSILE

George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1982, Ser. No. 430,346
Int. Cl.⁴ F41G 7/22
U.S. Cl. 244—3.15 **11 Claims**



1. A naval harrassment missile for launching frpom shipboard and autonomously flying to a designated target area and attacking a target and providing a homing signal for other missiles to guide them in attacking the target, the missile comprising:

a missile airframe with deployed wings, the wings when deployed fixed to the missile for controlling the missile during target harrassment, observation and terminal attack flight;

drive means mounted on the airframe for propelling the missile to the target area;

a missile flight computer mounted on the airframe and adapted for interfacing with a control computer on shipboard and receiving mission data therefrom, the flight computer receiving a command from the control computer to initiate take-off, the flight computer having preprogrammed information for flight to a designated target area, the flight computer controlling the speed of the drive means;

a target sensor mounted on the airframe and activated when the missile arrives in the designated area, the sensor when activated searches for and detects a target, the sensor providing guidance data on the target to the flight computer and control computer, the flight computer and control computer with the target data having the option to instruct the missile to enter a harrassment loiter pattern, an observation pattern and attack the target; and

a navigational signal unit mounted on the airframe for providing information to the flight computer and control computer for providing target data to other missiles to guide the other missiles in attacking the target.

4,553,719

VEHICLE LIFTING SYSTEM AND METHOD

David Ott, 3944 W. Alabama, Suite 101, Houston, Tex. 77027

Continuation-in-part of Ser. No. 548,652, Nov. 4, 1983, abandoned. This application Apr. 1, 1985, Ser. No. 717,644
Int. Cl.⁴ B64D 9/00
U.S. Cl. 244—118.1 **11 Claims**

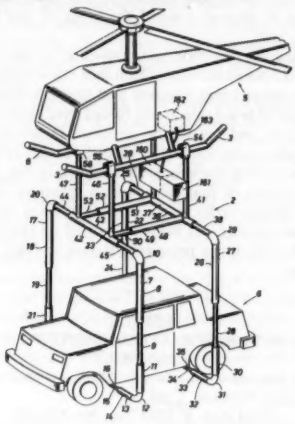
1. Apparatus for seizing and lifting a motor vehicle and the like, comprising

a first plurality of spaced-apart extensible frame members,

a second plurality of spaced-apart extensible frame members each interconnected across adjacent ends of said first extensible frame members,

a plurality of first suspension members each interconnected at one end of a selected one of said second plurality of frame members and each adapted at the other end to movably interconnect with the skid of a helicopter and the like,

a plurality of second suspension members each interconnected with and selectively extensible from one of the ends of one of said second plurality of frame members to and about a portion of said vehicle,



a plurality of hydraulically-actuated selectively extensible jacking means each disposed at the lower end of one of said second suspension members and being adapated to engage the chasis of the motor vehicle, and

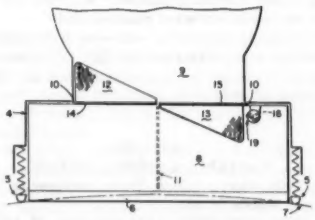
a plurality of rotating members each fixedly mounted on the lower end of one of said second suspension members for swinging the jacking means in and out from under the motor vehicle.

4,553,720

CONNECTING MECHANISM FOR AN AIRPLANE PASSENGER BRIDGE

Helmut Harder, Kassel, Fed. Rep. of Germany, assignor to Thyssen Industrie Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Aug. 16, 1983, Ser. No. 523,694
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1983, 8309614[U]
Int. Cl.⁴ B64D 9/00
U.S. Cl. 244—137 P **5 Claims**



1. A connecting mechanism for an airplane passenger bridge which provides a passageway for passengers who are boarding or deplaning an aircraft having a door; said connecting mechanism comprising:

a cabin which can be connected to said aircraft and which has a circumferential seal for placement against said aircraft is such a way as to extend completely around the door thereof; said cabin having a bottom which is in two different parts, namely a tiltable outer section which is

adapted to face said aircraft, and a rigid inner section; said outer section being arranged capable of being positioned horizontally, and being embodied as an inclinable floor having an essentially horizontal pivot axis which is disposed in the direction in which passengers walk; each of said sections of said bottom of said cabin having an end which is directed toward the other of said bottom sections; and

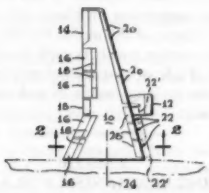
one triangular transition ramp provided on each of said ends of said bottom sections which face one another; said transition ramps being disposed next to one another, and each capable of being selectively folded over about a transverse axis, into and out of the direction in which passengers normally walk, located in spaced parallel relationship to the pertaining walking surface; when in use, the hypotenuse region of that side of each transition ramp which faces downwardly being directed toward the middle of the passageway and being supported on that bottom section to which the pertaining transition ramp is not connected.

4,553,721

SPOILER DEVICE FOR ATTACHMENT TO A LEADING EDGE SLAT

Bernard J. Jorgensen, Chatsworth, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed Aug. 5, 1983, Ser. No. 520,796
Int. Cl.⁴ B64C *9/22, 9/32*
U.S. Cl. 244—213 **5 Claims**



1. A spoiler device for an aircraft, said aircraft having a leading edge slat mounted on at least a portion of the leading edge of the wing of said aircraft, said slat moveable from a retracted position to an extended position, said spoiler device comprising:

a rear portion of said slat rotatably mounted thereto moveable from a retracted position, to an extended position so as to act as a spoiler;

biasing means adapted to yieldably hold said rear portion of said slat in said retracted position; and

actuation means mounted on said wing in detachable contact with said rear portion of said slat, said actuation means adapted to extend said rear portion when said slat is in said retracted position.

4,553,722

VARIABLE-CAMBER AIRFOIL

James B. Cole, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US82/01822, § 371 Date Dec. 30, 1982, § 102(e) Date Dec. 30, 1982, PCT Pub. No. WO84/02691, PCT Pub. Date Jul. 19, 1984
PCT Filed Dec. 30, 1982, Ser. No. 491,951
Int. Cl.⁴ B64C *3/50*
U.S. Cl. 244—219 **15 Claims**

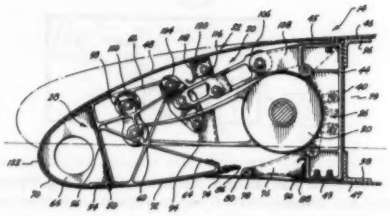
1. A variable-chamber airfoil having a span and a chord, comprising:

a front spar assembly, said front spar assembly extending spanwise through said airfoil and being affixed to said airfoil;

a nose structure, said nose structure including the leading edge of said airfoil;

an upper panel, said upper panel extending from adjacent said front spar assembly to adjacent said nose structure, said upper panel being flexible in a chordwise direction and forming a continuous upper aerodynamic surface of said airfoil between said front spar assembly and said nose structure, said nose structure and said upper panel being movable between a first position wherein said upper panel has a minimum curvature and a second position wherein said upper panel has a maximum curvature;

linkage means for swingably moving said nose structure downwardly and rearwardly from said first position to said second position; and



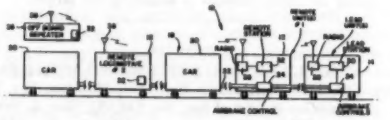
a lower aerodynamic surface, said lower aerodynamic surface extending from said front spar assembly to said nose structure, said lower aerodynamic surface including a rigid panel and a flexible panel, said rigid panel being affixed to said nose structure and movable therewith, a pivot mounted on the inner surface of said flexible panel, said flexible panel being pivotally mounted to said front spar assembly, said flexible panel having forward and rear ends that are biased upwardly, said pivot that is mounted on said inner surface of said flexible panel being mounted forward of the midpoint between said forward and rear ends of said flexible panel, said rigid panel movement being controlled by the linkage mechanism to remain in sliding contact with said forward end of said flexible panel when said nose structure moves between said first and second positions.

4,553,723

RAILROAD AIR BRAKE SYSTEM

Richard E. Nichols, and Dale H. Delaruelle, both of Melbourne, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Sep. 15, 1983, Ser. No. 532,522
Int. Cl.⁴ B61L *3/00*
U.S. Cl. 246—167 R **10 Claims**



1. In an air brake system for a train having at least a lead unit, one or more remote units and a plurality of cars which are provided with air brakes, the remote units each having an equalizing reservoir for providing a pressure reference for air brake control, and a relay valve in communication with each equalizing reservoir for applying pressurized air equal in pressure to the air pressure in the equalizing reservoir to a brake pipe coupled to the air brakes for the activation and deactivation of the air brakes of the plurality of cars, a main reservoir of air coupled to each relay valve for charging the brake pipe with air and means disposed between the main reservoir and

the relay valve for reducing the rate of flow of air between the main reservoir and the relay valve; an apparatus for analyzing air flow rate between the main reservoir and the relay valve comprising:

(a) means for measuring the pressure drop across the means for reducing flow rate, the means for measuring having a response time which is required to sense any change in pressure drop; and

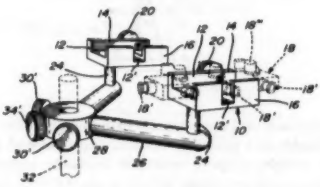
(b) means for analyzing the pressure drop over a time interval longer than the response time to detect a characteristic of the pressure drop as a function of time which is indicative of a flow rate change across said means for reducing.

4,553,724

STOP COCK MANIFOLD HOLDER

Maurice St-Amand, 44 Orléans St., Vimont, Laval, Quebec, Canada (H7M 1P2)

Filed Nov. 28, 1983, Ser. No. 555,597
Int. Cl.⁴ F16L 3/22
U.S. Cl. 248—68.1 **8 Claims**



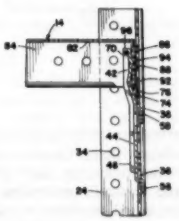
1. A holder for a medical stop cock manifold, the latter being in the shape of an elongated rectangular box; having at least one transverse nipple projecting out of the middle of one of the longer side walls thereof; the other longer side wall being free of any nipples; further having stopcocks projecting upwardly of the top wall thereof and a central protuberance extending downwardly of the bottom wall thereof; the holder comprising a rectangular block having a longitudinal channel open at both ends; said channel having a width slightly larger than the width of said box; said channel defining two spaced-apart upright longitudinal side flanges; said manifold being fittable longitudinally in said channel between said flanges; one of said flanges having a middle opening for said transverse nipple; the other of said flanges having a manifold fastening means; further comprising support means to securely and detachably support the holder above a floor.

4,553,725

STEEL SHELVING MOUNTING CLIP AND SHELVING STRUCTURE

William R. Vargo, 2101 Randall Ave., Lithonia, Ga. 30058

Continuation-in-part of Ser. No. 352,116, Feb. 25, 1982, abandoned. This application Aug. 15, 1983, Ser. No. 523,070
Int. Cl.⁴ A47B 57/24
U.S. Cl. 248—221.3 **2 Claims**



1. In a support assembly including an upstanding post having spaced apertures along the length thereof, and a shelf having an upper support surface, an underside, and a flange of predetermined length and thickness having apertures therethrough, said flange extending from the periphery of said shelf adjacent said underside thereof and having a lower edge:

a mounting clip comprised of a channel-shaped body portion having an upper segment and a lower segment, said segments being generally planar, with said upper segments being laterally offset from said lower segment such that said upper segment is approximately parallel to said lower segment;

at least one tab extending from said lower segment through the apertures in said post to interlock said clip with said post and define a generally U-shaped slot between said upper segment and said post wherein said slot is slightly less than the thickness of said flange;

a protuberance on said upper segment extending toward said post wherein said protuberance engages said aperture in said flange to lock said shelf in place; and

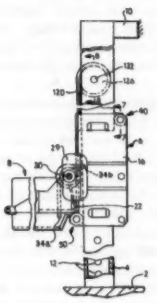
a flat support tab defining the bottom of said U-shaped slot for engaging and supporting the lower edge of said flange when said flange is within said slot, said support tab disposed substantially in the same vertical plane as said lower segment and being located such that a space exists between said clip and the underside of said shelf.

4,553,726

ADJUSTABLE HEIGHT SEAT APPARATUS FOR COMBAT VEHICLE

Theodore A. Jackson, Utica, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Sep. 19, 1983, Ser. No. 533,474
Int. Cl.⁴ E04G 3/00
U.S. Cl. 248—297.1 **8 Claims**



1. An adjustable height seat apparatus comprising:

(a) a base,

(b) a support means extending upwardly from the base and having a plurality of height adjustment means spaced along the length thereof,

(c) a carriage means carrying a seat on a front side thereof and forming a channel receiving said support means, said carriage means including a first guide roller means behind said support means in rolling contact therewith and a second guide roller means in front of said support means in rolling contact therewith and diagonally disposed relative to said first guide roller means to guide said carriage means and allow vertical movement thereof relative to said support means, said carriage means further including releasable locking means to engage said height adjustment means of said support means to releasably lock the carriage and seat in an adjusted position, and

(d) spring means having a spring member wound on a spool rotatably supported on said support means above the car-

riage means with the spring member having a vertically extending portion secured to said carriage to bias same upwardly when said locking means is released.

4,553,727

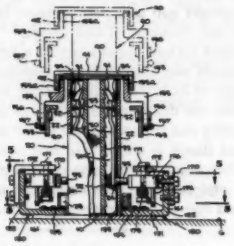
EXTENDIBLE JACK STAND ADAPTED FOR REMOTE CONTROL

Harry H. Arzouman, Los Angeles, Calif., assignor to Safe-T-Jack, Inc., Irvine, Calif.

Division of Ser. No. 261,686, May 7, 1981, Pat. No. 4,462,569. This application Apr. 20, 1984, Ser. No. 602,476

Int. Cl.⁴ B66F *5/04*

U.S. Cl. 248—354.7 **9 Claims**



1. An extendible jack stand comprising, in combination:

a flat base plate;

a frame of hollow rectangular cross sectional configuration rigidly attached to said base plate and extending upwardly therefrom;

a vertical shaft positioned in telescoping relationship to said frame including a first pair of parallel plates longitudinally slidable within said frame, and a second pair of parallel plates extending transversely between said first pair of plates, said second plates being spaced apart and also being inset from the edges of said first plates;

a horizontal load-bearing seat carried on the upper end of said shaft;

ratchet means carried by said frame and said shaft for locking said shaft in a selected elevational position relative to said base plate, said ratchet means including a vertical series of teeth formed on the outer surface of each of said second plates, and a pair of tooth members each pivotally supported from the inner surface of an associated wall of said frame, each tooth member having a single tooth adapted for engagement with the vertical series of teeth on the corresponding one of said second plates;

means associated with said frame and base plate for releasably securing a power unit thereto; and

means associated with said frame for selectively unlocking said ratchet means.

4,553,728

MULTIPLE POSITION BOOKSTAND

Thomas Corsello, 100 Alvord Park Rd., Torrington, Conn. 06790

Filed May 23, 1984, Ser. No. 613,336

Int. Cl.⁴ A47B *97/04*

U.S. Cl. 248—452 **4 Claims**

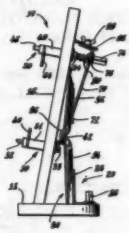
1. A multiple position bookstand for holding a book having a back, sides and pages which permits positioning and holding an open book on its side to permit reading the book in a reclining position comprising:

a laterally extending supporting base having an angled upright support with a front and a back mounted thereon and extending upward therefrom in a fixed position, said back of said angled upright support forming an angle of less than 90° with said base,

an upstanding base bracket mounted on said base and spaced behind said back of of said angled upright support adapted to bear on the pages of an open book placed on its side behind the back of said angled upright support, said upstanding base bracket being adjustable in a direction toward and away from said upright support

a downwardly extending bracket movably mounted on said back of said angled upright support above said upstanding base bracket adapted to hold the pages of an open book placed on its side behind said back of said angled upright support said downwardly extending bracket being adjustable both toward and away from, as well as in a generally vertical direction with respect to said upright support,

a first movable support means mounted on said back of said angled upright support between said upstanding base



bracket and said downwardly extending bracket and being adjustable in a generally vertical direction with respect to said upright support, said first movable support means having a free extremity which is spaced from the back of said upright support a distance less than the maximum adjusted spacings of said upstanding base and said downwardly extending bracket from said upright support, said free extremity being adapted to contact the back of the book and urge outward an open book positioned on its side between said base bracket and downwardly extending bracket on said back of said angled upright support thereby flattening the open book between said base bracket and said downwardly extending bracket.

4,553,729

MULTI-PANELLED CONCRETE FORMING STRUCTURE FOR FORMING FLAT CURVED WALLS

Frank T. Connors, Deerfield, Ill., assignor to Symons Corporation, Des Plaines, Ill.

Continuation of Ser. No. 326,824, Dec. 4, 1981, abandoned. This application Jan. 10, 1984, Ser. No. 568,937

Int. Cl.⁴ E04G *17/08*

U.S. Cl. 249—40 **11 Claims**

1. In a modular curved concrete form structure, wherein the improvement comprises a pair of curved sections with one section having a greater diameter, each section including a series of at least three vertically extending rows of modular concrete form panels joined together in curving side-by-side relation as a gang providing a generally curved surface concrete forming area, the panels each having confronting slotted panel margins about its perimeter, fasteners securing the con-

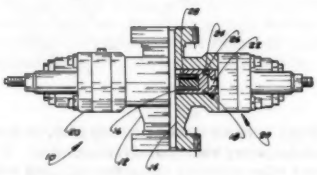
fronting panel margins in curving side-by-side relation, a series of spaced vertically aligned and horizontally positioned modular flat sided walers mounted in lapped engagement against said confronting slotted panel margins, said walers each having a width less than the width of a pair of the panels but exceeding the width of one of said form panels only being of sufficient additional width to extend over joints formed between the confronting slotted panel margins at opposite sides of each panel to provide a backing, fasteners securing the spaced vertically aligned horizontally positioned walers to the panels, upright strongback structure mounted in abutment against said spaced vertically aligned horizontally positioned walers generally in right angle relation thereto, and fastener means securing said strongback structure in unitary assembly with said panels.

4,553,730

RAM-TYPE BLOWOUT PREVENTER AND PACKER THEREFOR

John C. Vicic, c/o Cameron Iron Works, Inc., P.O. Box 1212, Houston, Tex. 77251

Filed Aug. 16, 1983, Ser. No. 523,421
Int. Cl.⁴ E21B *33/06*
U.S. Cl. 251—1.3 **13 Claims**



1. A ram-type blowout preventer comprising
a housing having a bore with aligned ram guideways extending through the housing from opposite sides of said bore,
a ram in each of said ram guideways having a front face facing said bore,
means for moving the rams inwardly and outwardly in said guideways, and
a front packer positioned in the front face of each of said rams,
each of said front packers including
a packing of resilient material having upper and lower surfaces,
a reinforcement means consisting of a plurality of layers of reinforcing non-metallic fabric material embedded in said packing, said plurality of layers being confined to a region in said packing located immediately below the front portion of said upper plate and spaced a substantial distance above the lower plate.

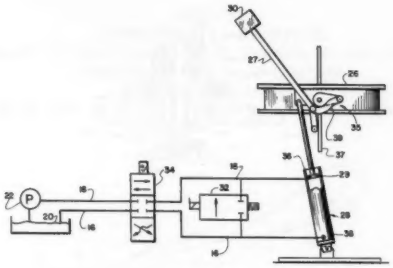
4,553,731

FAIL-CLOSED, TIGHT SEAL GAS SAFETY VALVE SYSTEM

John A. Carpenter, Valparaiso, Ind., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Sep. 7, 1984, Ser. No. 648,101
Int. Cl.⁴ F16K *31/42*
U.S. Cl. 251—27 **2 Claims**

2. A fail-closed tight seal gas safety valve system for blast furnace stove operations comprising an elastic-seated tight seal butterfly valve actuated by a double acting cylinder operating in conjunction with a spring-closed two-way solenoid valve and a servovalve which controls said double acting cylinder the operation of said butterfly valve being such that when carbon monoxide is being burned in the blast furnace stove, the solenoid on said solenoid valve and the balancing coils of said servovalve are energized causing said solenoid valve to close and allowing fluid to be pumped from a fluid reservoir through said servovalve into said cylinder, with the flow of the fluid being modulated by said servovalve, whereupon the piston in said cylinder will move upward allowing gas to flow from the furnace through said butterfly valve to the burner passageway and also allowing said butterfly valve to regulate the amount of gas flow into the blast furnace stove, and the operation of said butterfly valve being such that in the event of a power failure, said solenoid on said solenoid valve and said balancing coils of said servovalve will de-energize causing said solenoid valve to open, said servovalve to cease modulating fluid flow, and fluid to flow from the closed end of said cylinder to the rod end of said cylinder, thereby forcing the piston in said cylinder to retract and said butterfly valve to fail-closed with the aid of a



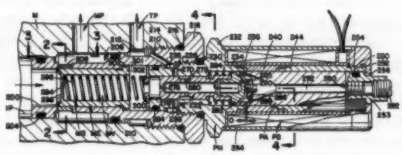
counterweight attached to and acting in conjunction with a progressively increasing leverage linkage system consisting of two pivotally-connected levers, one of which is attached to said shutoff valve via a third lever, other of which is attached to said cylinder and carries said counterweight, whereupon such fail closure said butterfly valve will shut off the flow of gas from the furnace to the burner passageway, cease regulating the amount of gas flow in the blast furnace stove, and prevent the leakage of carbon monoxide gas into the stove area, and the operation of said butterfly valve being such that in the event of a hydraulic failure, said butterfly valve will fail-closed in the same manner in which it fail-closes in the event of a power failure as described above.

4,553,732

SOLENOID CONTROLLED FLOW VALVE

Robert W. Brundage, 135 Paradise Rd., and Gene Swatty, 182 Grenney La., both of Painesville, Ohio 44077

Filed Feb. 13, 1984, Ser. No. 579,571
Int. Cl.⁴ F16K *11/10*
U.S. Cl. 251—30.01 **14 Claims**



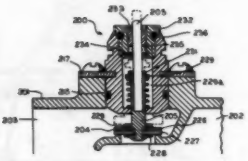
12. In an electrically controlled flow valve comprising in combination: a spring-biased, pressure-differential actuated main valve; an adjustable pilot flow valve, the flow of which, when varied, varies the pressure difference on said main valve; the improvement which comprises said pilot flow valve being of the pressure compensated type; and electro-magnetic means for varying the flow of fluid through said pilot valve and the pressure differential across said main valve.

4,553,733

ZONE CONTROL VALVE

Michael D. West, Arlington Heights, Ill., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 17, 1983, Ser. No. 458,556
Int. Cl.[4] F16K *31/00*
U.S. Cl. 251—291 6 Claims



1. A zone valve comprising:

a valve unit comprising a valve plug having a generally cylindrical portion, of a first diameter, and a circumferential groove on said cylindrical portion;

an operator unit comprising a frame member having a valve plug receiving aperture, said plug receiving aperture having a diameter at least equal to said first diameter, a wire locking spring coupled to said operator unit having first and second arm portions spaced apart a distance less than said first diameter, said first and second arm portions being positioned on one side of said frame member adjacent said aperture such that when said valve plug is inserted through said frame member said first and second arm portions engage said circumferential groove to prevent movement of said valve plug relative to said operation unit in a direction along the axis of insertion while permitting rotational movement of said valve plug relative to said operator;

said wire locking spring including said first and second arm portions integrally formed with first and second handle portions respectively to connect and an interconnecting web integrally formed said first handle portion to said second handle portions in a unitary construction, said wire locking spring being operable such that when said first and second handle portions are moved in a direction towards each other, said first and second arm portions are outwardly deflected and disengage said groove; and

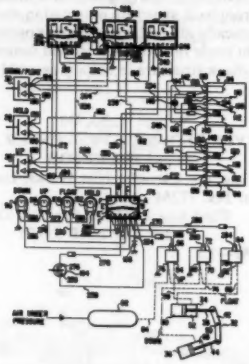
said frame member including first and second apertures spaced a predetermined distance from said aperture and wherein said wire locking spring includes a first offset portion intermediate said first arm portion and said first handle portion and a second offset portion intermediate said second arm portion and said second handle such that said first and said second arm portions lie in a first plane and said first and second handle portions lie in a second plane, said first offset portion being received in said first aperture, said second offset portion being received in said second aperture such that said wire locking spring is retained in position relative to said plug receiving aperture.

4,553,734

FINGER PRESSURE ACTUABLE DUMP CONTROL SYSTEM FOR DUMP VEHICLES

Koichi Oka, and Fumio Shintani, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 28, 1983, Ser. No. 566,251
Int. Cl.[4] F15B *13/044;* F01B *1/00*
U.S. Cl. 251—58 3 Claims



1. A finger pressure actuable dump control system for a dump vehicle having a dump body, comprising:

(a) a hoist valve actuating means for operating a hoist valve comprising first and second fluid actuated cylinders operatively connected to the hoist valve, the first cylinder having an "up" chamber and a "float" chamber, the second cylinder have a "down" chamber:

(b) a source of fluid under pressure;

(c) "up" valve means for on-off control of communication between the "up" chamber of the first cylinder and the pressurized fluid source;

(d) "float valve means for on-off control of communication between the "float" chamber of the first cylinder and the pressurized fluid source;

(e) "down" valve means for on-off control of communication between the "down" chamber of the second cylinder and the pressurized fluid source;

(f) an "up" switch to be activated manually;

(g) a "hold" switch to be activated manually;

(h) a "down/float" switch to be activated manually;

(i) "up" circuit means for opening the "up" valve means in response to the activation of the "up" switch;

(j) "hold" circuit means for closing the "up", "float" and "down" valve means in response to the activation of the "hold" switch;

(k) "down" circuit means for opening the "down" valve means in response to the activation of the "down/float" switch; and

(l) "float" circuit means for opening the "float" valve means in response to the release of the "down/float" switch.

4,553,735

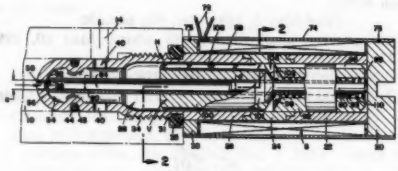
SOLENOID CONTROLLED VALVE

Robert W. Brundage, 135 Paradise Rd., Painesville, Ohio 44077

Filed Jan. 13, 1982, Ser. No. 339,092
Int. Cl.[4] F16K *31/06, 25/00*
U.S. Cl. 251—129.16 5 Claims

1. A fluid pressure valve comprising in combination a housing having an elongated cylindrical cavity therein; said housing being comprised of first, second and third lengths of tubing fastened in end to end relationship, one end of said first length being formed to a portion of lesser diameter and having a

drilled axial opening therethrough providing a high pressure inlet port defined by a valve seat, means closing the open end of said third length, an outlet port drilled through a side of said first length spaced from said formed end, said second length being of magnetically non-permeable material, a valve member including a magnetically permeable armature slidable in said cavity and having an axially facing surface; a valve stem



formed from hypodermic tubing fastened to said armature and extending therebeyond toward said inlet port, a magnetically permeable core member inside of said cavity and having an axially facing surface in spaced relationship to said armature surface, the end of said tubing being formed to a lesser diameter to form a valve seat engaging surface having a passage therethrough to the inside of said tubing, and means spaced from said passage closing the inside of said tubing.

4,553,736

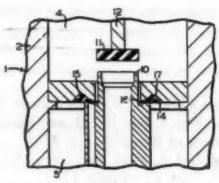
PNEUMATIC PLUNGER-TYPE VALVE

Patrick R. Dellario, Northridge, Calif., assignor to American Standard Inc., Lexington, Ky.

Continuation of Ser. No. 331,503, Dec. 17, 1981, abandoned. This application May 30, 1984, Ser. No. 602,875

Int. Cl.⁴ F16K *1/42*

U.S. Cl. 251—334 **7 Claims**



1. A valve device comprising:

(a) a housing;

(b) a separating wall securely positioned in said housing for defining a fluid supply chamber and a fluid delivery chamber within said housing;

(c) a central opening through said separating wall for providing a fluid communication passageway between said fluid supply chamber and said fluid delivery chamber;

(d) an annular channel formed in said separating wall on the side thereof adjacent said fluid delivery chamber, said annular channel being spaced a predetermined distance from an annular wall defining said central opening in said separating wall;

(e) an annular tapered portion on said separating wall on said side thereof adjacent said fluid delivery chamber, said tapered portion being tapered from a point beginning substantially at the edge of said central opening adjacent said fluid delivery chamber and terminating at a point along a wall which defines the inside diameter of said annular channel; the thickness of said separating wall along said tapered portion being greatest at said edge of said central opening

(f) a resilient valve seat fixedly engaged in said annular channel in said separating wall positioned in said housing;

(g) a fluid flow control valve stem reciprocably operable within said housing;

(h) a valve member carried on said fluid flow control valve stem for making seating contact on said resilient valve seat upon movement of said fluid flow control valve stem in one direction; and

(i) an outer edge on said valve member formed by a tapered annular disk-like surface sloping downwardly and inwardly toward the center of said fluid flow control valve stem, said outer edge and said tapered annular disk-like surface making said seating contact with said resilient valve seat.

4,553,737

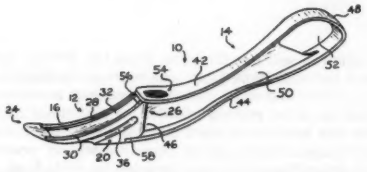
PRYING STAPLE REMOVER

Chol H. Yi, 1919 Citron St., #901, Honolulu, Hi. (96826)

Filed Mar. 4, 1985, Ser. No. 707,684

Int. Cl.⁴ B25C *11/00*

U.S. Cl. 254—28 **4 Claims**



1. A prying staple remover for staples having a base and two depending legs, said remover comprising:

a head portion having an arcuate bottom surface, an arcuate top surface, and a pair of side surfaces connecting said bottom surface to said top surface; said bottom surface having a greater radius of curvature than said top surface; said top surface including a pair of separated rails and a ferromagnetic member disposed between and recessed downwardly from said rails; said top surface and said bottom surface meeting at a blunt prying tip; said pair of side surfaces each including arcuate side grooves which follow the curvature of said top surface and which open on said bottom surface; whereby a base of a removed staple is magnetically attracted against said rails by said ferromagnetic member, and the legs of said staple are engaged with and channeled away from said bottom surface by said side grooves; and

an arcuate handle portion connected to an end of said head portion that is distal from said prying tip.

4,553,738

CABLE PULLING DEVICE WITH ANTI-REVERSING CLUTCH

Jeffrey J. Plummer, and Larry G. Adleman, both of Rockford, Ill., assignors to Ex-Cell-O Corporation, Troy, Mich.

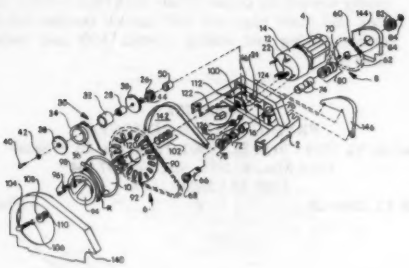
Continuation of Ser. No. 435,171, Oct. 19, 1982, abandoned. This application Sep. 4, 1984, Ser. No. 646,991

Int. Cl.⁴ B66D *1/20, 3/16, 5/32*

U.S. Cl. 254—358 **2 Claims**

1. A cable pulling device, comprising a support frame, a capstan rotatably mounted on the support frame about a rotational axis, an electric driving motor mounted on the support frame and having an output shaft rotatable about an output rotational axis substantially parallel with the rotational axis of the capstan, a chain and sprocket means between the output shaft and capstan, said means having a first sprocket mounted on the output shaft and driven thereby and having a second sprocket attached to the capstan for rotating same in one direction to pull cable when the driving motor is actuated, and an anti-reversing roller clutch means including a housing with a lateral extension member mounted thereon extending trans-

versely of the rotational axis of the capstan and output shaft, said extension member fixedly retained on the support frame against rotation and with a housing bore within said housing coaxially aligned with the output shaft for receiving the output shaft, an inner race in said housing bore mounted on the output shaft for rotation therewith and an outer roller clutch and bearing assembly with a non-rotatable outer race in said housing bore and bearings between said inner race and outer race



for rotation in said one direction when the driving motor is actuated for cable pulling but said bearings binding between the inner race and outer race when rotated in the reverse direction so as to prevent rotation of said inner race and thereby lock said output shaft, chain and sprocket means and capstan against rotation in the reverse direction, preventing rotation thereof in the reverse direction by cable loads when the driving motor power is interrupted.

4,553,739

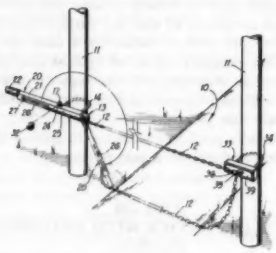
FLEXIBLE BARRIER HOLDING AND MANIPULATING MECHANISM

Richard M. Baines, Rte. 5, Sentry Dr., Cartersville, Ga. 30120

Continuation-in-part of Ser. No. 463,340, Feb. 3, 1983,. This application Apr. 13, 1984, Ser. No. 600,147

Int. Cl.[4] A01G *17/06;* **E04H** *17/00*

U.S. Cl. 256—23 **5 Claims**



1. A mechanism for adjusting a flexible barrier element across a passageway defined by two spaced upstanding posts, said mechanism comprising a first bracket means secured to one post at an elevation above the lower end of such post, a second bracket means secured to the other post at substantially the same elevation and having a substantially level top face, a hand lever pivotally attached to the second bracket means on a horizontal pivot axis so that the hand lever can swing in a vertical arc, the hand lever being adapted in a substantially level position to rest on the second bracket means and in a second position to extend downwardly from the second bracket means, said hand lever comprising an angle bar section having a top web and a depending vertical side web, said top web engaging and resting on said top face of the second bracket means when the hand lever is in said level position, a flexible barrier element connected with the first bracket means, and a lost motion connection between the flexible barrier element and said hand lever said lost motion connection including a slot in said side web.

4,553,740

FENCING

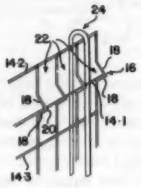
Alan Bailey, Cape Town, South Africa, assignor to Cape Gate Fence & Wire Works (Proprietary) Limited, Cape Province, South Africa

Filed May 3, 1984, Ser. No. 606,630

Claims priority, application South Africa, May 10, 1983, 83/3337

Int. Cl.[4] E04H *17/02;* **B21F** *27/00*

U.S. Cl. 256—33 **8 Claims**



1. A fence structure including a mesh fence panel and a fence panel securing element of inverted U-shape, said panel comprising at least one horizontally extending zone at which at least one horizontally extending wire is offset horizontally with respect to the horizontally extending wires above and below it whereby these three wires bound a space which is open both upwardly and downwardly, said U-shaped fastener comprising two spaced limbs, one of said limbs passing downwardly through said space behind said one wire and the other of said limbs passing downwardly externally of said space and behind the other two wires, the limbs of said fastener entering the ground to secure said panel to the ground.

4,553,741

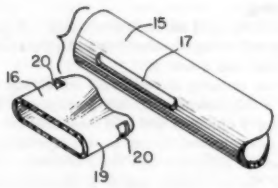
PLASTIC FENCE ASSEMBLY

Charles K. Creasy, Rte. 1, Box 107-B, and Eustis Hendley, Rte. 1, Box 109-B, both of Brooklet, Ga. 30415

Filed Oct. 4, 1984, Ser. No. 657,678

Int. Cl.[4] E04H *17/14*

U.S. Cl. 256—66 **2 Claims**



1. A fence section having two plastic fence posts comprising lengths of hollow cylindrical tubing anchored to stand vertically above the ground at a predetermined spacing and defining therein an axially spaced set of two or more axially elongated oval shaped apertures for receiving thereinto mating rails of elongated oval shape extending between two spaced posts and extending into the hollow cylindrical tubing of said posts, two hollow plastic rails held between said posts with oval shaped ends thereon mating with said oval shaped apertures of said posts, the rails being of a length substantially that of the predetermined spacing such that the ends thereof at

opposite ends of the rail extend through the apertures into the hollow cylindrical tubing of the respective spaced posts, wherein the rails are flattened oval shaped members each having flexible deformable plastic ends with a slit on each side of the rail width through the oval shaped members near opposite ends and removed a short distance from the end of the rail, the rail width being slightly greater than the length of the apertures in the posts whereby the rail may be deformed to mate the slits to fit into locking engagement with the apertures in the posts.

4,553,742

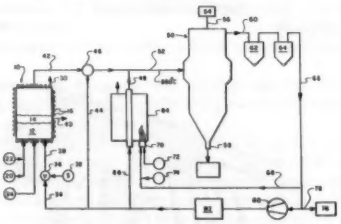
APPARATUS FOR GENERATING A REDUCING GAS

Frank V. Summers; David C. Meissner, and Ronald Brown, all of Charlotte, N.C., assignors to Midrex International BV Rotterdam, Zurich Branch, Zurich, Switzerland

Division of Ser. No. 556,502, Dec. 1, 1983, , which is a continuation-in-part of Ser. No. 360,713, Mar. 22, 1982, abandoned. This application Oct. 9, 1984, Ser. No. 659,109

Int. Cl.[4] F27B *19/04*

U.S. Cl. 266—156 **4 Claims**



1. Apparatus for generating a reducing gas and reducing iron oxide, said apparatus comprising:

(a) a molten bath gasifier for producing a gasifier gas, said gasifier containing a molten iron bath;

(b) a generally vertical shaft furnace for the direct reduction of iron, said furnace having particle introducing means at the top thereof, particle removal means at the bottom thereof for establishing a descending burden therein, reducing gas introduction means between said particle introducing means and said particle removal means and a spent top gas outlet for removing spent top gas from the upper portion of said furnace;

(c) a first conduit communicating with said gasifier and said reducing gas introduction means for removing reducing gas from said gasifier and introducing reducing gas to said shaft furnace;

(d) means for cooling and cleaning said spent top gas removed from the upper portion of said shaft furnace;

(e) a second conduit communicating between said spent gas outlet and said cooling and cleaning means;

(f) acid gas removal means for removing CO_2 from said cleaned, cooled spent top gas;

(g) a third conduit communicating with said spent top gas cooling and cleaning means and said acid gas removal means;

(h) a fourth conduit communicating between said acid gas removal means and the bottom of said gasifier;

(i) a fifth conduit communicating between said acid gas removal means and said first conduit;

(j) a sixth conduit communicating between said acid gas removal means and said first conduit and having heating means therein;

(k) means for injecting solid fossil fuel into the bottom of said gasifier beneath the surface of said molten iron bath; and

(l) means for injecting oxygen into said gasifier beneath the surface of said molten iron bath.

4,553,743

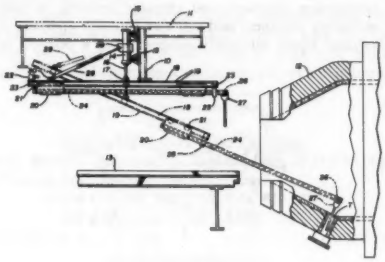
ELEVATED DEVICE FOR PLACING SLAG RETENTION MEANS IN TAPPING CONVERTERS

Michael D. LaBate, II, Ellwood City, and Joseph A. Perri, Coraopolis, both of Pa., assignors to Insul Company, Inc., East Palestine, Ohio

Filed Aug. 23, 1984, Ser. No. 643,499

Int. Cl.[4] C21B *5/46*

U.S. Cl. 266—272 **4 Claims**



1. Apparatus for placing a slag retaining device in a tap hole in a converter comprising a two part boom extensible into said converter, said two part boom including a first part which is movable longitudinally of said second part so that said two part boom is collapsible upon itself, a stationary vertical support member depending from an overhead structure, a lift and lower device mounted on said vertical support member and pivotally engaging said second part of said boom at a first location, a tilt device engaging said lift and lower device and said second part of said boom at a second location which is spaced from said first location for supporting said two part boom and tilting said two part boom with respect to said lift and lower device whereby said two part boom is supported at at least two spaced apart positions, means engaging said lift and lower device and said vertical support member for moving said vertical support member on its longitudinal axis in a rotary motion, a carriage movably mounted on said second part of said boom and means for moving said carriage longitudinally along said boom second part, said first part of said boom affixed at one of its ends to said carriage for movement in a path parallel with said second part of said boom for extending and retracting said boom first part with respect to said boom second part toward and away from said converter and the tap hole therein and means on the other end of said second part of said boom detachably mounting said elongated slag retaining device.

4,553,744

DAMPER DEVICE FOR ENGINE MOUNTINGS OR THE LIKE

Keizo Konishi; Teruo Yonehama, and Takao Yamamoto, all of Aichi, Japan, assignors to Tokai Rubber Industries Ltd., Komaki, Japan

Filed Oct. 27, 1980, Ser. No. 201,341

Claims priority, application Japan, Nov. 6, 1979, 54-143521

Int. Cl.[4] F16F *9/34, 1/36, 9/10*

U.S. Cl. 267—140.1 **6 Claims**

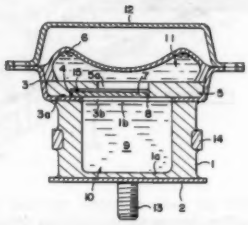
1. A damping device comprising:

an elastic member having first and second opposed ends and a generally cylindrical first chamber extending into the first end thereof;

a first mounting member affixed to said first end of said elastic member and having a circular opening with a diameter substantially equal to the diameter of said cylindrical first chamber, said circular opening being concentric with said cylindrical first chamber;

a second mounting member affixed to the second end of said elastic member;

a retainer adjacent said first mounting member and on the side thereof opposite said elastic member, said retainer having a shallow cylindrical indentation extending partially into the surface of said retainer adjacent said first mounting member, said shallow cylindrical indentation being defined by a substantially planar bottom wall and a cylindrical side wall, said indentation being partially adjacent and eccentric with said circular opening in said first mounting member, said retainer further including a circular through aperture extending through a portion of said indentation adjacent said circular opening in said first mounting member, said circular through aperture in said retainer being internally tangent with a portion of said



shallow cylindrical indentation of said retainer adjacent said circular opening in said first mounting member;

an elastic cover attached to said first mounting member in said retainer, said elastic cover defining a second chamber; and

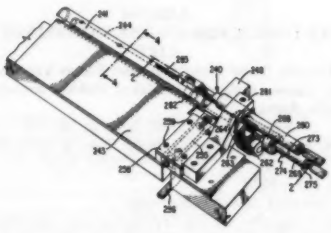
a substantially circular partition having a continuous central portion disposed in and slightly movable in said indentation in said retainer, the perimeter of said partition being such that a creseent shaped peripheral slot is defined between the perimeter of said partition and both the circular opening in said first mounting member and the through aperture in said retainer, said crescent shaped peripheral slot providing continuous communication between the first and second chambers.

4,553,745

FABRIC CLAMPING MEANS FOR DRIVEN WORK FOLDER

John M. Franke, Sr., Glendale, Calif., assignor to The Singer Company, Stamford, Conn.

Filed Apr. 2, 1985, Ser. No. 719,094
Int. Cl.[4] B42C *1/00*
U.S. Cl. 270—45 **4 Claims**



1. An automatically operable work fabric manipulating device for folding and delivering one edge of a fabric panel, including

a mandrel rotatable about a lengthwise axis;

said mandrel being formed with a fabric accomodating slot extending parallel to the lengthwise axis thereof, and having a mouth opening at one side of said mandrel;

drive means for rotating said mandrel to form a fold in a fabric panel edge inserted in said mandrel slot, said drive means operatively connected to said mandrel adjacent one lengthwise extremity of said slot;

said slot extending continuously to the other and free extremity of said mandrel; and

a sheath surrounding at least a portion of said mandrel and providing for frictional engagement of a work fabric panel interposed therebetween by the rotation of said mandrel;

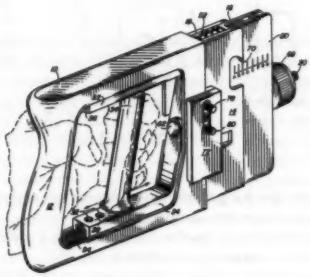
the improvement which comprises fabric clamping means carried by said mandrel for rotation therewith and operating means for selectively shifting said fabric clamping means relative to said mandrel into and out of a position securely clamping a fabric panel to said mandrel.

4,553,746

HAND EXERCISER

Valerie H. Lee, Star Route 1, Box 542, 6914 E. Continental Mnt. Dr., Cave Creek, Ariz. 85331, assignor to Valerie Holdeman Lee; William Matthias Lee; Arlene Schaffner and Donald Schaffner, all of Scottsdale, Ariz.

Filed Aug. 19, 1983, Ser. No. 524,565
Int. Cl.[4] A63B *21/30*
U.S. Cl. 272—68 **9 Claims**



1. A hand exerciser, comprising:

a frame having a contoured hand grip portion;

a slide mechanism supported within said frame for reciprocative movement therein including a slide element for supporting a finger grip and an insert element, said insert element being slidably received by said slide element, said slide element including a first plurality of support means in a lower portion thereof and a second plurality of support means in an upper portion thereof, said finger grip being rotatable on a rod having the ends thereof positioned by any one of said first plurality of support means and any one of said second plurality of support means, said first and second pluralities of support means being aligned with the direction of reciprocation so as to enable a stroke distance between said contoured hand grip portion and said finger grip to be varied and depending upon what first and second support means are utilized to vary the angle of said finger grip portion with respect to said hand grip portion

resilient means coupled between said frame and said slide mechanism for resisting movement between said frame and said slide mechanism and resisting the insertion of said insert element into said slide element; and

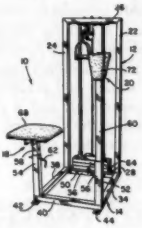
adjusting means for varying the resistance of the resilient means between said frame and said slide mechanism including an adjustment element extending between said slide element and said insert element and means coupled to said adjustment element for manually adjusting the resistance of said resilient means.

4,553,747

ROTATOR CUFF MACHINE

David A. Pursley, 599 Doyal Mills Ct., Stone Mountain, Ga. 30083

Filed May 10, 1983, Ser. No. 493,171
Int. Cl.[4] A63B *21/06*
U.S. Cl. 272—118 18 Claims



1. A machine for exercising the rotator cuff of a human being, comprising:

an upright support frame having a front, a back and two sides;

a handle;

tension means mounted on said upright support frame for biasing said handle said handle being movable forwardly of said support frame under tension;

a first body support member comprising a set spaced from said upright support frame and containing a first body support surface positioned in front of said upright support frame;

a second body support member comprising an arm rest spaced from said upright support frame and containing a second body support surface positioned in front of said upright support frame, said second body support surface being spaced vertically above said first body support surface such that the arm of a user can rest in a substantially horizontal position on said second body support surface while the user sits on said first body support surface,

said seat and said arm rest being positioned in a plane which passes through the shoulders of a user such that the users arm is positioned substantially in said plane to isolate the rotator cuff for exercising.

4,553,748

ELECTROSTATICALLY ENHANCED GAME

Ray L. Allen, 204 Townsend Pl., Atlanta, Ga. 30327, and N. Cole Harrison, 1438 Tullie Rd., Atlanta, Ga. 30329

Filed Jul. 26, 1983, Ser. No. 517,465
Int. Cl.[4] A63F *9/00*
U.S. Cl. 273—1 E 10 Claims

1. In an electronic game including game signal means for providing a control signal upon the occurrence of a predetermined event in said game, an electrostatic enhancement apparatus for said game, comprising:

electrostatic generator means operative to generate a high voltage low current electrical charge upon being provided with power;

electrode means coupled to said generator means for providing said electrical charge to the person of a player;

isolation booth means containing said electrode means for surrounding and electrically isolating a player from the surrounding environment and for preventing accidental discharge of said electrical charge; and

control means responsive to said control signal from said game for providing power to said generator means and for causing said generator means to provide said electrical charge to the player,

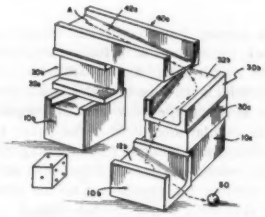
whereby upon the occurrence of said predetermined event in said game, a player in physical contact with said electrode will experience a safe high voltage low current static electrical charging, causing the player's hair to raise.

4,553,749

TOY AND GAME APPARATUS

Robert L. Bender, and Annie L. Bender, both of 513 W. Ferry St., Berrien Springs, Mich. 49103

Filed Oct. 14, 1983, Ser. No. 542,159
Int. Cl.[4] A63F *7/02;* A63H *18/02*
U.S. Cl. 273—1 R 8 Claims



1. A game apparatus comprising:

a plurality of block elements having integral surface means therein for providing at least one recessed, inclined passageway extending between sides of the individual block elements, wherein said block elements may be arranged during the course of play such that various paths may be defined along a plurality of said inclined passageways;

random number generating means for determining the number of said block elements which may be arranged at a particular time during the course of play; and

freely movable means for traveling along said paths defined by said passageways.

5. A method of employing a game apparatus having a predetermined number of block elements with integral recessed surface means therein for providing passageway means extending to at least one side of said block elements, comprising:

arranging said block elements in vertically and horizontally adjacent and spaced apart orientations until all of said block elements are so employed; and

reorienting said block elements so as to align a plurality of said passageway means and block element surfaces to define at least one extended path.

4,553,750

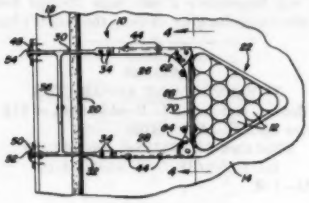
RACK ATTACHMENT FOR GAME TABLES

Glenn W. Kintz, 3306 Ammon Way, Forest Grove, Oreg. 97116

Filed Sep. 8, 1983, Ser. No. 530,221
Int. Cl.[4] A63D *15/00*
U.S. Cl. 273—22 16 Claims

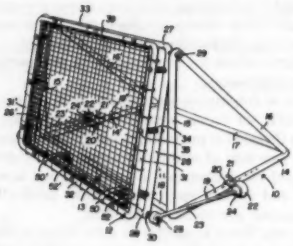
1. An attachment for use on a conventional pool table for the placement of game playing pieces such as pool balls in required location and orientation on the surface of the table, the attachment comprising a rack of specified shape for receiving a complement of the playing pieces and orienting the complement in a required configuration, a support frame extending from the rack, and mounting means for mounting the frame

detachably and pivotally on the table surround for pivotal movement of the rack about a horizontal axis between a lowered operative position in which the rack is supported on the playing surface for placement of the playing pieces, and a raised inoperative position for detachment of the rack from the table after placement of playing pieces, the length of the support frame effectively fixing the position of the rack relative to the table in a longitudinal direction and the location of the mounting means relative to the table surround effectively fixing the position of the rack in the transverse direction,



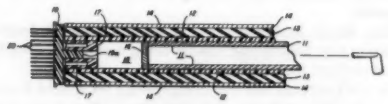
wherein the support frame comprises support arms extending from the rack, the support arms having telescopic portions for adjusting the length of the support frame to suit the length of a table with which the attachment is used, adjustable swivel connections between the rack and the respective arms for adjusting the angular alignment of the entire rack relative to the support frame and wherein the mounting means comprises a ball-shaped member at the end of each arm and a corresponding socket member for attachment to the table surround to receive and releasably locate the ball-shaped member.

4,553,751
REBOUND APPARATUS
John L. Ketchum, 3200 SW. 94th Pl., Miami, Fla. 33165
Filed Nov. 2, 1984, Ser. No. 667,800
Int. Cl.[4] A63B *69/40*
U.S. Cl. 273—26 A **8 Claims**



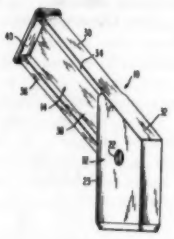
1. A rebound apparatus comprising:
a support base having a pair of rigid, laterally spaced, opposite, upwardly extending side members;
frame means extending between said side members at the front of said support base and pivotally mounted on the upper ends of said side members;
means for selectively adjusting the fore-and-aft position of the lower end of said frame means with respect to said support base;
and a rebound member on said frame means;
said frame means comprising a rear frame horizontally pivoted at the top to said support base, a front frame positioned in front of said rear frame and carrying said rebound member, and springs engaged between said front and rear frames and permitting rearward displacement of said front frame toward said rear frame in response to an impact on said rebound member;
said support base comprising a pair of rigid, laterally spaced, opposite, bottom members extending rearward respectively from the lower ends of said side members, each of said bottom members having a plurality of openings spaced apart along its length rearward;
and said means for adjusting said frame means comprising a pair of sliders slidably adjustable respectively along said bottom members and a locking member on each slider selectively insertable into said openings in said bottom member, a pair of rigid members respectively extending forward from said sliders and pivotally coupled to said rear frame at its lower end, and a respective ball-and-socket joint connecting the rear end of each said rigid member to the corresponding slider.

4,553,752
GOLF APPARATUS
Robert D. Bagg, 387 Chestnut St., Oneonta, N.Y. 13820
Filed Nov. 23, 1984, Ser. No. 674,497
Int. Cl.[4] A63B *57/00*
U.S. Cl. 273—32 A **4 Claims**



1. In a golf club having a generally-cylindrical handle portion, the combination of: a chamber adapted to carry powder formed in said handle portion; and cap means on said handle, said cap means carrying brush means on an exterior surface of said cap means, and said cap means being movable to open and close said chamber to allow powder to fall from said chamber.

4,553,753
ANGULAR HOCKEY STICK GRIP
Gerald F. Gibbons, 9610 51st Pl., College Park, Md. 20740
Continuation-in-part of Ser. No. 552,896, Nov. 17, 1983, abandoned, which is a continuation-in-part of Ser. No. 526,288, Aug. 25, 1983, abandoned. This application Mar. 22, 1984, Ser. No. 592,311
Int. Cl.[4] A63B *59/12*
U.S. Cl. 273—67 A **10 Claims**



1. An auxiliary angular hockey stick handle for attachment to the upper end of the shaft of an ice hockey stick for providing improved control of said stick and increased efficiency, comfort, and safety in the use thereof, said handle comprising:
an elongated, rigid, lower handle portion having a first axis and top and bottom ends, said bottom end of said lower handle portion defining a downwardly-opening socket, said lower handle portion and said socket each being generally rectangular in cross-section, said socket being

sufficiently large to coaxially receive an upper end of a shaft of an ice hockey stick;

receiving means in said lower handle portion adapted to receive a fastener for securing said lower handle portion to a shaft located within said socket;

an elongated, rigid, upper handle portion having a second axis, said upper handle portion and said lower handle portion being formed in one piece, said upper handle portion being shaped to form a gripping portion having substantially the same nominal cross-sectional dimensions as said socket, said upper handle portion rigidly joined the top end of said lower handle portion so that said first and second axes intersect at a fixed, predetermined angle of between about 125 degrees and about 160 degrees to thereby form an angled gripping portion for a shaft.

4,553,754

BEAD PUZZLE

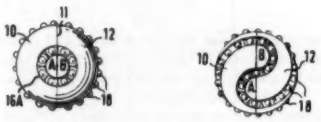
Christopher C. Wiggs, 48A Queenstown Rd., London, England (SW8 3RY), and Christopher J. Taylor, Flat 3, 17 Queensgate Pl., London, England (SW7)

Filed Feb. 16, 1982, Ser. No. 348,825

Claims priority, application United Kingdom, May 1, 1981, 8113543

Int. Cl.⁴ A63F *9/08*

U.S. Cl. 273—153 S **27 Claims**



26. A puzzle comprising at least two relatively movable members in contact with one another at a division line and movable with respect to each other along said division line, means in each of said members defining a plurality of tracks spaced along the division line, at least two of the tracks in at least two of said members connecting two points spaced along said division line, said plurality of tracks forming continuous paths between said members in at least two different positions of said members with respect to each other, and a plurality of elements of at least two distinguishable types substantially filling said plurality of tracks and being displaceable along said paths when said members are disposed in each of said at least two positions.

4,553,755

GOLF CLUB HEAD

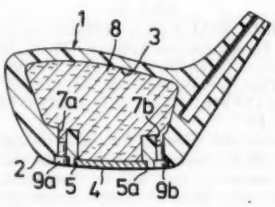
Magoichi Yamada, Tokyo, Japan, assignor to Daiwa Golf Co., Ltd., Kurume, Japan

Filed Jan. 16, 1984, Ser. No. 570,783

Claims priority, application Japan, Jan. 28, 1983, 58-10872[U]; Jan. 28, 1983, 58-10873[U]

Int. Cl.⁴ A63B *53/04*

U.S. Cl. 273—171 **2 Claims**



1. A golf club head:

(a) a golf club head body made of molded material having a specific gravity that is large relative to conventional wood materials, said body having a large weight compensating central cavity opening at the sole of said body;

(b) said body having toe and heel lobes that protrude inwardly there to reduce the cavity opening, said cavity overlying said toe and heel lobes;

(c) said body having stepped portions between said lobes to provide mounting areas for a sole plate;

(d) a sole plate fitted to the cavity opening at said sole, seated on said areas and fitted around said lobes;

(e) said lobes having fill holes for injection of foamable plastic into said cavity and for purging of air during the molding process, said fill holes being independent of said sole plate whereby finishing of said sole plate can be achieved before injection of foamable plastic;

(f) foamed plastic entirely filling said cavity;

(g) removable plugs for said fill holes; and

(h) said golf club head body having a hosel out of communication with said cavity.

4,553,756

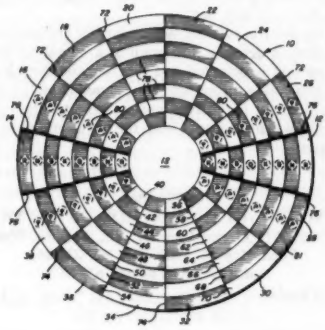
CIRCULAR CHESS

Robert L. Linnekin, 82 Liberty St., Danvers, Mass. 01923

Filed Aug. 12, 1983, Ser. No. 523,171

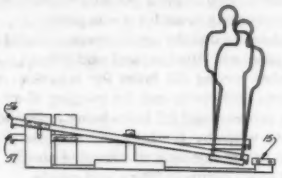
Int. Cl.⁴ A63F *3/02*

U.S. Cl. 273—261 **5 Claims**



1. A flat, two-dimensional circular chess gameboard apparatus adapted for playing chess by two opposing players and to accommodate a plurality of standard chess pieces, said apparatus defining a circular game area including fourteen generally straight elongated radial zones spaced about and extending outward from a central zone, each of said radial zones including a single column of eight discrete spaces of two alternating colors spaced therealong and with each set of corresponding spaces of said zones disposed in an annular path extending about said central zone and with the colors of each set of annular path spaces alternating thereabout, said fourteen zones including a pair of home zones arranged diametrically opposite each other on opposite sides of said central zone and with six of said radial zones disposed between said home zones in each direction extending about said central zones, boundary line means defining a discrete generally straight boundary line extending generally radially of said central zone between each pair of adjacent radial zones with the boundary line between each side of each home zone and the adjacent radial zone being visually distinct from the boundary lines defined between adjacent radial zones exclusive of said home zones.

4,553,757
COMBAT SIMULATOR
Edward M. Keeney, 120 North St., Monrovia, Calif. 91016
Filed Jan. 25, 1984, Ser. No. 573,792
Int. Cl.[4] F41J 9/02
U.S. Cl. 273—369 16 Claims



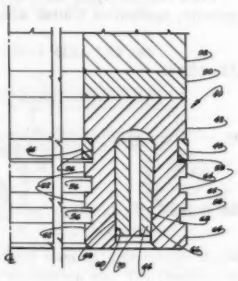
13. A firearm training system comprising a master control unit and at least one slave unit, each comprising:
a track having first and second ends, said track being pivotally movable between a first inclined position wherein the first end is higher than the second end and a second inclinded position wherein the first end is lower than the second end;
reciprocating means for moving the track between the first and second inclined positions;
a lifelike target slidably engaging said track so that when the first end of the track is higher than the second end, the target moves toward the second end, and when the first end of the track is lower than the second end, the target moves toward the first end;
wherein the master control unit further comprises a switch for simultaneously activating and deactivating the reciprocating means for each unit; and
wherein the firearm training system further comprises an ultrasonic motion detector for sending a signal to the switch when motion is detected and wherein the switch activates the reciprocating means when the signal from the ultrasonic motion detector is received and deactivates the reciprocating means when the signal from the ultrasonic motion detector ceases.

4,553,758
SKIPPING STONES AND METHOD OF USE THEREOF
John S. Zehr, 5118 Marine View Dr. NE., Tacoma, Wash. 98422
Filed May 21, 1985, Ser. No. 736,451
Int. Cl.[4] A63B 67/06, 65/10
U.S. Cl. 273—424 11 Claims

1. A skipping stone having characteristics enhancing its ability to skip a large number of times on the surface of a body of water across which it is thrown and enhancing the distance it will travel across the water before sinking, said skipping stone comprising;
a cementitious body having a lower, generally circular water engaging surface which is centrally dimpled in its near-center region and progressively outwardly convex in its near-edge region;
such water engaging surface being bounded by a sharply convex peripheral edge and a generally cylindrical side wall, the configuration of the sharply convex peripheral edge of the water engaging surface and the adjoining sidewall being such, as to minimize surface tension induced suction on the stone, caused by the water across which the water engaging surface of the stone is moving.

7. The method of use of a skipping stone as set forth in claim 1, comprising:
soaking the stone in water for a time sufficient for the stone to absorb a substantial amount of water, and
throwing the water saoked stone in a flat trajectory and with a spinning action across a body of water so that it will skip repeatedly on the water, the water emerging from the stone by reason of such spinning action providing an enhanced water-to-water contact of the stone with thesurface of the body of water, thereby reducing frictional drag during such contact and enhancing the distance the stone travels across the water before sinking.

4,553,759
VALVE AND IMPROVED STEM SEAL THEREFOR
James E. Kilmoyer, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.
Filed Dec. 10, 1984, Ser. No. 680,185
Int. Cl.[4] F16J 15/18; F16K 41/04
U.S. Cl. 277—12 17 Claims



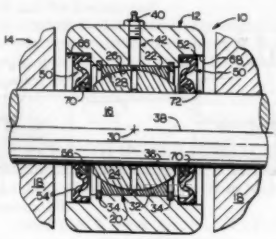
1. A valve comprising
a body having a valve chamber, an inlet into, an outlet from and an opening from said valve chamber extending through said body and a valve seat in said valve chamber surrounding said outlet,
a valve member movably positioned in said valve chamber,
a stem connected to said valve and extending through said opening,
means coacting with said stem to move said valve member with respect to said valve seat to control flow through said valve,
a stem sealing assembly for sealing between said stem and said opening and including
a sealing ring having an internal and an external sealing lip and an end recess, and
a load ring positioned in said end recess and having its external surface tapered toward the axis of said stem and toward said valve member, and
means for retaining said stem sealing assembly between said stem and said opening.

4,553,760
FLEXIBLE SEAL FOR A SPHERICAL JOINT
Lyle T. Reed, Farmington, and Arthur E. Olt, Jr., Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Nov. 19, 1984, Ser. No. 672,725
Int. Cl.[4] F16J 15/24, 15/32; B62D 55/00
U.S. Cl. 277—12 8 Claims

1. In a flexible seal assembly for use in sealing a spherical joint, said flexible seal assembly having an outer mounting ring, an inner lip restraining ring, and an elastomeric body, said body having an outer diameter portion secured to said mounting ring, an inner diameter portion secured to said lip restraining ring and a thin walled convoluted intermediate portion having a generally S-shaped configuration interconnecting

said outer and inner diameter portions and providing sufficient flexure capability for accommodating pivotal movement of said spherical joint, the improvement comprising:

said inner lip restraining ring being constructed of a rigid plastic material; and



said elastomeric body being of a unitary construction of a tough wear resistant elastomer and including an integral radial seal lip extending from the inner diameter portion of the body in proximate relationship to the lip restraining ring.

4,553,761

SEAL

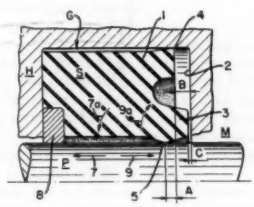
Dieter Blesing; Erich Habel, both of Fürth, and Hans J. Walther, Hemsbach, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Sep. 1, 1983, Ser. No. 528,512

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1982, 3245338

Int. Cl.⁴ F16J *9/20, 15/32*

U.S. Cl. 277—152 **9 Claims**



1. In a U ring for a seal for a machine part relatively axially displaceable through an annular, internally-open groove having an end face in a relatively stationary machine part, the U ring for the seal having a body of resilient material, an enlarged, radially-outside sealing-lip portion for forming a statically-acting seal with the groove, and an enlarged, radially-inside sealing lip portion near one end of the U ring for forming a dynamically-acting seal with the axially-displaceable machine part which extends therethrough, the improvement to the U ring made by the process comprising:

dimensioning the U ring along the radially outside, statically-acting seal portion thereof to the end having the dynamically-acting seal relative to the end face of the groove in which the U ring will be used such that the spacing between the outside portion and the groove end face is greater than the spacing between the inside portion and the groove end face; and

positioning the statically-acting and the dynamically-acting seals along the respective radial outside the inside portions of the U ring relative to the resilience of the U ring body such that the dynamically-acting seal tilts from the relatively displaceable machine part when the latter moves to force the U ring against the groove end face.

4,553,762

SHAFT SEAL RING

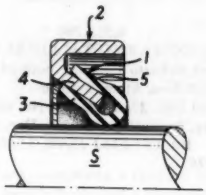
Helmut Hoelzer, Weinheim, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Jul. 1, 1983, Ser. No. 510,344

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1982, 3237638

Int. Cl.⁴ F16J *15/32*

U.S. Cl. 277—152 **18 Claims**



1. A shaft seal ring made by the process comprising:

providing a reinforcing ring having an inwardly-directed at least partly-conical extension;

providing an elastically deformable lip ring having a hose-like, axial portion with an outwardly-directed flange on one side thereof; and

inserting the hose-like, axial portion of the lip ring first into the extension of the reinforcing ring in the direction in which the extension conically narrows with an axial pressure acting on the inside diameter of the flange of the lip ring until the flange is sufficiently elastically deformed that the elastic deformability of the lip ring turns the hose-like portion up against the side of the extension opposite the flange,

the lip ring then having a general U-shape engaging opposite sides of the extension with the arms of the generally U-shaped lip ring only sufficiently to form relatively-rotatable sealing surfaces with the extension, the base of the generally U-shaped lip ring extending about the innermost end of the extension to form a static shaft-bearing seal surface on the outside thereof.

4,553,763

SEAL RING HAVING AN AXIS PARALLEL INTERMEDIATE RING

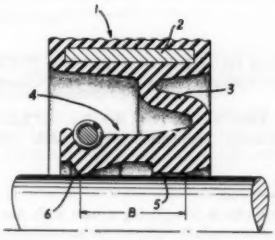
Peter Ehrmann, Hemsbach, Fed. Rep. of Germany, assignor to Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Mar. 1, 1984, Ser. No. 585,487

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1983, 3307470

Int. Cl.⁴ F16J *15/32*

U.S. Cl. 277—153 **3 Claims**



1. A seal ring, comprising:

a lip ring (4) which is at least radially resilient and has a sealing lip (6) and a support surface (5) axially spaced from the sealing lip;

a reinforcing ring (1) radially spaced from the lip ring and coaxial therewith; and

a resilient intermediate ring (3) which extends, in part, approximately parallel to the axis of the lip and reinforcing rings, is joined at one end to the lip ring within the axial range of the support surface and, via the axis parallel part, is joined at the other end to the reinforcing ring within an axial region (B) bounded by the sealing lip and the end of the support surface axially remote therefrom.

4,553,764

FLEXIBLE, ANNULAR METALLIC SEALING DEVICE

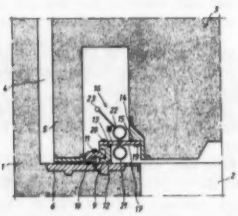
Bo Borrman, and Roberto Puggioli, both of Västerås, Sweden, assignors to AB Asea Atom, Sweden

Filed Dec. 27, 1984, Ser. No. 686,801

Claims priority, application Sweden, Dec. 30, 1983, 8307230

Int. Cl.[4] F16J *15/08, 15/48*

U.S. Cl. 277—226 **2 Claims**



1. A flexible, annular sealing device arranged for sealing between a high-pressure fluid and a low-pressure fluid, said sealing device having a high-pressure surface arranged in contact with said high-pressure fluid, and a low-pressure surface arranged in contact with said low-pressure fluid, and comprising a rigid, radially inner annular member (17), a radially outer annular member (18), and a flexible annular portion, said inner annular member and said outer annular member being mechanically and pressure-tightly connected to each other by means of said flexible annular portion (21, 22), wherein said high-pressure surface is partially constituted by the external surface of a first hollow, metallic ring (21) included in said flexible portion, whereas said low-pressure surface is partially constituted by the external surface of a second hollow metallic ring (22) included in said flexible portion, each of said hollow rings along its entire tangential extension having a gap, the edges of which are pressure-tightly mechanically connected to said inner and said outer annular member, respectively, said hollow rings (21, 22) being pneumatically connected to each other by means of said annular members (17, 18).

4,553,765

DUST GUARD FOR A SCROLL CHUCK

Hisao Negoro, Ohkubo 335, Kumatori-cho, Sennangun, Osaka, Japan

Filed Nov. 2, 1984, Ser. No. 667,522

Claims priority, application Japan, Jul. 26, 1984, 59-114385[U]

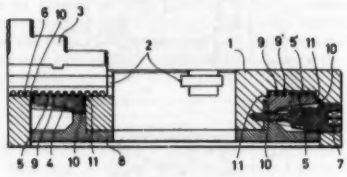
Int. Cl.[4] B26B *31/16*

U.S. Cl. 279—1 ME **1 Claim**

1. In a scroll chuck comprising a main body having a plurality of chuck slots radially formed in its surface, a chuck jaw slidably fitted in each of said chuck slots, and a scroll plate accommodated in said main body and provided with a scroll thread on its front surface in the form of a continuous groove for engaging with a rack provided on the rear surface of said chuck jaw,

the improvement comprising:

a dust guard consisting of an elastic cord made of a material having rubberlike elasticity,



said elastic cord being fitted in said continuous groove over the full length thereof in such a manner that the inmost surface of said elastic cord touches the root of said scroll thread while the outside surface of said elastic cord is substantially flush with the crest of said scroll thread.

4,553,766

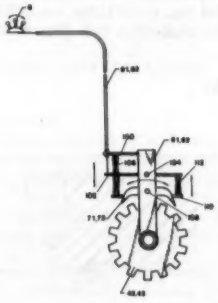
ROCKING AND MOVING MIMIC HORSE

Chen-Chia Liu, No. 32 Ta Jen Kung Rd., Kaohsiung, Taiwan

Filed Nov. 15, 1982, Ser. No. 441,629

Int. Cl.[4] A63F *1/07*

U.S. Cl. 280—1.182 **5 Claims**



1. A rocking and moving mimic horse comprising:

a wheel supporting frame;

a simulated horse body pivotally mounted on said frame for forward and backward rocking movement;

a set of wheels rotatably mounted on said frame for forward, backward, and turning movement of the frame;

a steering device operatively mounted on said frame and operatively connected to said wheels to turn the wheels to steer the frame and horse body comprising,

a steering handle, a first downwardly projecting steering rod connected to said handle, a first substantially horizontal rod connected to said steering rod, a second substantially horizontal rod spaced rearwardly from said first rod, substantially parallel steering links pivotally connected at their ends to the ends of said first and second rods, a second downwardly projecting steering rod connected to said second substantially horizontal rod, a third substantially horizontal rod connected to said second downwardly projecting steering rod, and a pair of crossed steering links each connected at one end to one end of said third substantially horizontal rod and at their other ends to respective ones of said wheels mounted on said frame for turning, said handle, steering rods, substantially horizontal rods and steering links being connected so that turning

said handle steers the mimic horse when moving forward and backward;

at least one power drive mechanism operatively engageable between said set of wheels and said horse body so that when engaged rocking motion of said horse body drives said set of wheels to propel said frame and horse body forward and backward; and

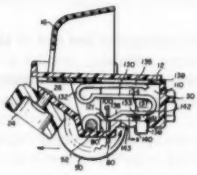
a direction control device operatively engageable with said at least one power drive mechanism to selectively shift said mechanism between forward, backward and neutral non-engaged positions.

4,553,767

ROLLER SKATE WITH INTEGRAL RATCHET MEANS

Frederick B. Robjent, Orchard Park, N.Y., and Reuben B. Klamer, La Jolla, Calif., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Feb. 9, 1984, Ser. No. 578,473
Int. Cl.⁴ A63C *17/14*
U.S. Cl. 280—11.21 **9 Claims**



1. A roller skate adapted for selectable unidirectional or bidirectional motion comprising:

a hollow body;

a plurality of wheels attached to said body, at least one of said wheels having a cylindrical rolling portion including an inner surface surrounding a hollow inner chamber;

a plurality of ratchet teeth formed in said surface;

a vertically oriented plate mounted for slidable movement vertically within said body and having pawl means at one end of said plate extending out of said body and at least partially into said chamber; and

control means for moving said plate between a first position wherein said pawl means is lowered into engagement with said teeth in a ratcheting manner and a second position wherein said pawl means is raised out of engagement with said teeth.

4,553,768

REAR SUSPENSION FOR VEHICLES

Yoshimi Furukawa, Saitama; Shoichi Sano, Tokyo; Hiroshi Takamatsu, Saitama, and Makoto Sato, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

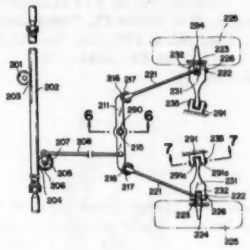
Filed Nov. 21, 1983, Ser. No. 553,704
Claims priority, application Japan, Nov. 19, 1982, 57-204296; Dec. 8, 1982, 57-214817
Int. Cl.⁴ B62D *7/00*
U.S. Cl. 280—91 **7 Claims**

1. A rear suspension for a vehicle including a vehicle body, a front wheel, a rear wheel and a steering system for steering both said front wheel and said rear wheel by a steering wheel, comprising:

a rear wheel support member for supporting said rear wheel with respect to said vehicle body;

biasing means, interposed between said vehicle body and said rear wheel support member, for biasing said rear wheel to restore the steering position thereof to the neutral position thereof;

a knuckle arm supporting said rear wheel, and a lower arm turnable relative to said vehicle body integrally with said knuckle arm; and



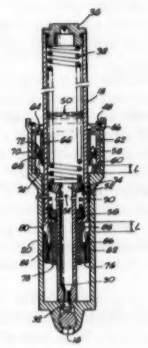
said biasing means comprising a resilient member interconnecting said vehicle body and a transversely inner end of said lower arm, said resilient member being of strong resiliency.

4,553,769

FRONT FORK FOR A TWO-WHEELED VEHICLE

Takeshi Kawaguchi, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 27, 1984, Ser. No. 624,932
Claims priority, application Japan, Jun. 28, 1983, 58-116773
Int. Cl.⁴ B62K *25/08*
U.S. Cl. 280—276 **12 Claims**



11. A strut for a telescopic front fork of a two-wheeled vehicle, comprising

a first tube;

a second tube partially telescoped together with said first tube;

a first collar positioned between said first and second tubes and being slidably mounted to said first tube;

second collar positioned between said first and second tubes and being slidably mounted to said second tube;

a first ball bearing between said first collar and said second tube;

a second ball bearing between said first collar and said first tube;

a first stop between said first and second tubes and fixed to said second tube adjacent said first collar;

a second stop between said first and second tubes and fixed to said first tube adjacent said second collar;

a first spring biasing said first collar away from said first stop; and

a second spring biasing said second collar away from said second stop.

4,553,770

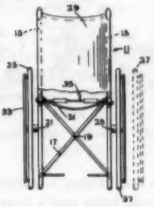
WHEELCHAIR ATTACHMENT

Roger T. Lyman, 2810 Marlin Ct., Punta Gorda, Fla. 33950

Filed Jul. 6, 1983, Ser. No. 511,382

Int. Cl.[4] A61G 5/00

U.S. Cl. 280—289 WC **8 Claims**



1. In a wheelchair of the foldable type having vertical side frames with wheels journaled thereto, the improvement for maintaining said wheelchair at a reduced width comprising

(a) a flexible elongate member disposed between said side frames,

(b) means for adjusting the length of said elongate member, said means comprising,

(i) a pair of turnbuckle-like members having an open ended threaded cavity therein and an aperture in a closed end portion thereof,

(ii) a pair of eyebolt members threadedly received in said turnbuckle-like members, and

(iii) a flexible cable extending through said apertures with stop members within each cavity fixed to the ends of said cable,

(c) a length of flexible cable looped through the eye portion of each eyebolt and looped around said side frame;

(d) a bent plate having one aperture therein through which one end of said length of flexible cable passes, said one end carrying a stop member that is incapable of passing through said one aperture; and

(e) a second aperture in said plate of such size and shape that a stop member fixed to the other end of said length of flexible cable is incapable of passing through another portion of said second aperture.

4,553,771

SKI BINDING FOR CROSS-COUNTRY SKIING

Jean Bernard; Jean J. A. Beyl, both of Nevers; Christian Campillo, Garchizy, and Daniel le Faou, Varennes Vauzelles, all of France, assignors to Ste Look, Nievre, France

Filed May 10, 1983, Ser. No. 493,265

Claims priority, application France, May 21, 1982, 82 08885

Int. Cl.[4] A63C 9/00

U.S. Cl. 280—615 **2 Claims**

1. In a ski binding for cross-country skiing which comprises:

a shoe-retaining member which is secured to the ski and adapted to receive by downward engagement a toe end of the ski shoe;

a locking lever mounted on a cross-pin for pivotal displacement in a direction parallel to the ski and having locking means for maintaining the toe end of the ski shoe within the shoe-retaining member;

an elastic element for urging the locking lever pivotally toward the position in which it retains the toe end of the shoe;

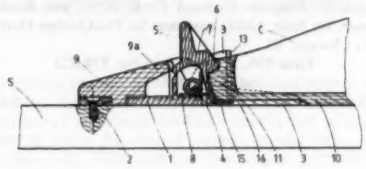
the improvement comprising a rigid extracting appendage rigid with the locking lever and adapted to exert an upwardly directed thrust beneath the toe end of the ski shoe when the locking lever undergoes a pivotal displacement towards its shoe-releasing position in opposition to said elastic element, said elastic element comprising an elastic block fixedly secured to the ski forwardly of and bearing rearwardly directly against the locking lever.

2. In a ski binding for cross-country skiing which comprises:

a shoe-retaining member which is secured to the ski and adapted to receive by downward engagement a toe end of the ski shoe;

a locking lever mounted on a cross-pin for pivotal displacement in a direction parallel to the ski and having locking means for maintaining the toe end of the ski shoe within the shoe-retaining member;

an elastic element for urging the locking lever pivotally toward the position in which it retains the toe end of the shoe;



the improvement comprising a rigid extracting appendage rigid with the locking lever and adapted to exert an upwardly directed thrust beneath the toe end of the ski shoe when the locking lever undergoes a pivotal displacement towards its shoe-releasing position in opposition to said elastic element, said elastic element comprising a coiled torsion spring acting between the ski and the locking device.

4,553,772

SAFETY SKI BINDING

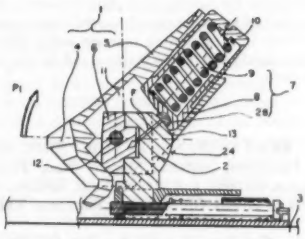
Jean-Pierre Boussemart, Choisy; Rene Bressand, Saint-Jorioz, and Roger Pascal, Annecy-le-Vieux, all of France, assignors to Salomon S.A., Annecy, France

Filed Mar. 17, 1983, Ser. No. 476,202

Claims priority, application France, Mar. 17, 1982, 82 04948

Int. Cl.[4] A63C 9/00

U.S. Cl. 280—628 **78 Claims**



1. A safety binding for a ski, comprising:

(a) a support, attached to said ski having a front surface; and

(b) an assembly comprising:

(i) a jaw, adapted to hold at least a portion of a boot and to be able to pivot both laterally and vertically;

(ii) a pivoting element having a rear surface, adapted to engage said front surface of said support and to pivot with respect to said support, wherein said jaw is adapted to pivot vertically on said pivoting element around a transverse axis; and

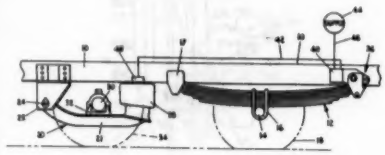
(iii) an elastic means for biasing said jaw against lateral and vertical pivoting.

4,553,773

LOAD EQUALIZER VALVE AND SUSPENSION SYSTEM

William C. Pierce, Muskegon, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Aug. 5, 1983, Ser. No. 520,810
Int. Cl.[4] B60G 5/00
U.S. Cl. 280—676 22 Claims



1. A suspension for wheeled vehicles comprising:
a leaf spring suspension mounted at opposing ends to a vehicle frame;
a first axle secured to said leaf spring suspension and mounting ground-engaging wheels;
a pneumatic suspension secured to said vehicle frame;
a second axle secured to said pneumatic suspension and mounting ground-engaging wheels;
said pneumatic suspension including:
an air spring mounted between said vehicle frame and said second axle;
a source of pressurized air for supplying air to said air spring;
an air line communicating said source of pressurized air with said air spring;
pressure regulator means mounted in said air line for controlling the air pressure in said air spring;
said pressure regulator means including:
valve means for regulating the flow of pressurized air through said regulator means so as to control the pressure in said air spring; and
actuator means having a bearing member for controlling operation of said valve means responsive to the force applied to said bearing member so as to regulate said air flow, said bearing member at least in part operatively supporting an end of said leaf-spring suspension so that said actuator means directly measures the load at the end of said leaf-spring suspension;
wherein said pressure regulator means controls the pressure in said air spring so as to distribute the load on said vehicle between said first and second axles.

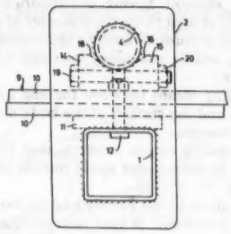
4,553,774

VEHICLE SUSPENSION

George D. Malcolm, P.O. Box 334, Station T, Calgary, Alberta, Canada (T2H 2G9)

Filed Sep. 6, 1983, Ser. No. 529,640
Claims priority, application New Zealand, Sep. 7, 1982, 201835
Int. Cl.[4] B60G 11/04
U.S. Cl. 280—718 8 Claims

1. A vehicle suspension comprising:
(a) a beam axle;
(b) two pair of plates one said pair being mounted on each end of the beam axle and the two plates of each pair being spaced from each other along the axis of the beam axle;
(c) two stub axles each being offset from the beam axle and each extending between the plates of one of the said pairs of plates;
(d) two leaf springs each extending transversely of the beam axle between the plates of one of the said pairs of plates;
(e) two pairs of opposed wedges one pair being situated between each said leaf spring and its adjacent stub axle and positioned to form a cradle for its stub axle; and



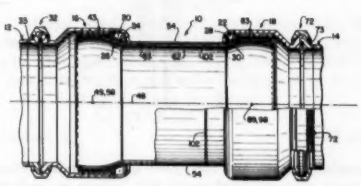
(f) means for drawing the wedges of each said pair of opposed wedges together to wedge the leaf spring and the stub axle apart.

4,553,775

RESILIENT ANNULAR SEAL WITH SUPPORTING LINER

Horace P. Halling, Laurel, Md., assignor to Pressure Science Incorporated, Beltsville, Md.

Filed Apr. 26, 1983, Ser. No. 488,648
Int. Cl.[4] F16L 27/06, 9/14
U.S. Cl. 285—55 15 Claims



1. In a fluid-tight sealing apparatus for sealing a pair of tubes, the first tube having an inner tubular surface and the second tube having a metallic, resilient annular sealing member extending therefrom, the sealing member comprising a ring portion having a curved outer surface for engagement with the inner tubular surface, the curved outer surface having a free maximum radius greater than the largest radius of the inner surface to provide an interference fit between the curved outer surface and the inner tubular surface, the improvement comprising:
rigid means, coupled to said sealing member and located inside and substantially concentric to said ring portion but spaced inwardly therefrom, for limiting radially inward deformation of said ring portion to prevent plastic deformation thereof,
said ring portion having a curved cross section in the axial direction, which cross section is concave in the radially inwardly facing direction,
said rigid means having an outer surface which has a curved cross section in the axial direction and is convex in the radially outwardly facing direction.

4,553,776

TUBING CONNECTOR

Paul L. Dodd, Metairie, La., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 25, 1983, Ser. No. 545,304
Int. Cl.[4] F16L 5/00
U.S. Cl. 285—212 11 Claims

1. A small-diameter tubing connector and sealing apparatus for anchoring a small-diameter tubing in fluidtight flow com-

munication with a body element having a recess therein in communication with a flow passage in said body element, said apparatus comprising

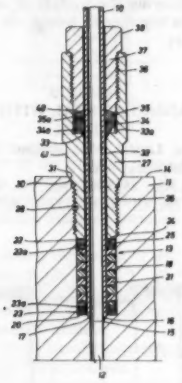
a body element having a cylindrical shouldered recess therein at least twice the diameter of a tubing to be sealed therein to form an annular space around the tubing;

a tubing axially extending into said recess to the bottom thereof;

first sealing means between the end of said tubing in said recess and the surface of the body element at the bottom of the recess;

second sealing means between said tubing and body elements in the annular space outside the lower end of the tubing;

packing gland means having a tubing bore therethrough and being positioned in said annular space, one end of said packing gland means being engageable with said second



sealing means and the other end extending outside said body element, said other end having an enlarged bore therein, said packing gland having a seating shoulder formed on the outer wall of said gland at its seated position in the body element;

third sealing means formed between said packing gland means seating shoulder and a mating shoulder around the top of the body element recess;

fourth sealing means positioned at the bottom of the enlarged bore of said packing gland means between said tubing and said packing gland means;

first actuating means operatively engaging said packing gland means and said body element for energizing said second and third sealing means, and

second actuating means operatively engaging said packing gland and said tubing for energizing said fourth and first sealing

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4,553,777

PIPE COUPLERS

Arthur L. Paddington, 8 Glenside, Whitstable, Kent, England (CT5 3DT)

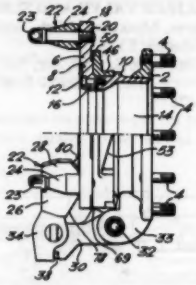
Filed Apr. 7, 1983, Ser. No. 482,784

Claims priority, application United Kingdom, Apr. 15, 1982, 8210954

Int. Cl.⁴ F16L *25/00*

U.S. Cl. 285—420 **10 Claims**

1. A coupler for coupling together two pipes, which comprises a plurality of pivotally mounted hook arms and an actuator ring which is capable of rotation to pivot the hook arms into and out of a pipe-coupling position, said coupler further comprising a substantially cylindrical body on which the hook arms and actuator ring are mounted, wherein the actuator ring is provided with a cam track arranged to cause the hook arms to pivot into and out of a position in which they serve to lock a flange at the end of a pipe to said substantially cylindrical body, and wherein the cam track and the hook arms are so



configured that frictional forces therebetween are capable of locking the hook arms against vibration when used with varying thicknesses of flanges and without the provision of any other movable clamping means.

4,553,778

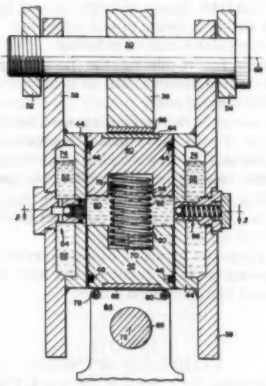
IMPLEMENT SNUBBING DEVICE

Robert C. Tyer, Keystone Heights, Fla., assignor to Rockland, Inc., Bedford, Pa.

Filed May 6, 1983, Ser. No. 492,176

Int. Cl.⁴ B66C *1/00*

U.S. Cl. 294—86.4 **52 Claims**



1. An implement snubbing device positionable between a boom and an implement comprising:

a compressible member positioned generally between, and having a longitudinal axis extending generally between, the boom and the implement,

a boom connecting means for connecting said compressible member to the boom, and

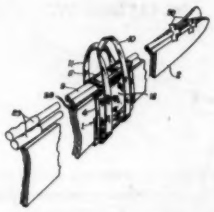
an implement connecting means for connecting the implement to said compressible member,

said compressible member including a compressing means for compressing said compressible member along said longitudinal axis,

said compressing means being actuated by the swinging movement of the implement about a first lateral axis generally perpendicular to said longitudinal axis, and

said compressing means including a cam means rotatable about said first lateral axis thereby snubbing the rotational movement of the implement about said first lateral axis.

4,553,779
SKI CADDY
Timothy D. Shortridge, 4460 50th St., San Diego, Calif. 92115
Filed May 30, 1984, Ser. No. 615,355
Int. Cl.⁴ A63C *11/02*
U.S. Cl. 294—147 **7 Claims**



1. A foldable clutch for carrying a first set of elongated objects, such as skis, and a second set of elongated objects, such as ski poles, comprising:

a main rectangular body of pliable material, having an inner face and an outer face, for wrapping around said first set of elongated objects;

first fastener means for releasably securing said outer face at one end of said main body to the inner face at the opposite end thereof when said main body is in a wrapped conformation around said first set of elongated objects;

said first fastener means comprising interengageable strips of hook and loop fastening material secured along the inner and outer edges respectively of the shorter sides of said rectangular body, and said strips being located and dimensioned to releasably mate when the inner edge overlaps the outer edge and when the outer edge overlaps the inner edge;

an auxiliary flap of pliable material, also having an inner face and an outer face, for wrapping around said second set of elongated objects;

the outer face of said auxiliary flap being permanently secured to the outer face of said main body and off the median area of said outer face;

said second set of elongated objects being positioned above said first set of elongated objects;

second fastener means for releasably securing one side of said auxiliary flap to the opposite side thereof when said auxiliary flap is in a wrapped conformation around said second set of elongated objects; and

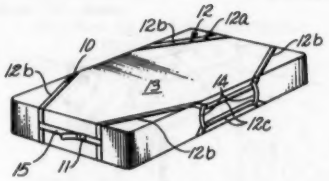
a pair of handles comprising an elongated continuous loop of ribbon having two parallel spaced-apart, linear portions running along the longer sides on the outer face of said rectangular body and being permanently attached to the median area of said outer face.

4,553,780
MATTRESS CARRYING HARNESS
Donald C. Strachan, 11969 Pendleton Rd., Yucaipa, Calif. 92399
Filed Jun. 18, 1984, Ser. No. 621,422
Int. Cl.⁴ B65D *63/18*
U.S. Cl. 294—152 **4 Claims**

1. A carrying harness, comprising:

two flexible belts of substantially equal length formed into two separate elongated continuous loops by having their own ends fastened together;

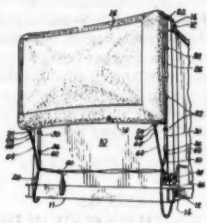
four flexible connecting belts, two of which are fastened between opposing points on each of the continuous loops so that the opposite ends of each continuous loop are formed into two spaced-apart corner loops adapted to fit over adjacent corners of an object to be carried, the corner loops being connected by two segments of the continuous loop extending between the fastening points of the connecting belts, the segments being adapted to lie along the edges of the object to be carried when the corner loops are fitted over the corners of the object;



two flexible end belts connecting the ends of the continuous loops so as to lie along the remaining edges of the object to be carried when the corner loops are fitted over the corners of the object; and

means for adjusting the length of the two end belts.

4,553,781
STREAMLINING APPARATUS FOR SEA/LAND CONTAINERS
David W. Johnson, 1884 Sunset Blvd., San Diego, Calif. 92103
Continuation-in-part of Ser. No. 337,809, Jan. 8, 1982, Pat. No. 4,427,229. This application Aug. 1, 1983, Ser. No. 519,076
The portion of the term of this patent subsequent to Jan. 24, 2001, has been disclaimed.
Int. Cl.⁴ B62D *35/00*
U.S. Cl. 296—1 S **22 Claims**



1. An apparatus for mounting a drag-reducing body on the bluff front face of a vehicle, comprising:

(a) a cable;

(b) an anchor means for securing one end of said cable adjacent an upper portion of said face;

(c) a pulley and pulley mounting means mounting same adjacent an upper portion of said face spaced from said anchor means;

(d) said cable passing from said anchor means through said pulley defining a midsection between said means and an extensible end beyond said pulley extensible to vary the slack in said midsection;

(e) means on said cable midsection for engaging an upper portion of a drag reducing body;

(f) means on said vehicle for holding a lower portion of said body down against said bluff face, whereby said body can be engaged in a lowered position by the slack midsection of said cable, raised into operative position by pulling the extensible end of said cable, and the lower portion of said body held against said face.

4,553,782

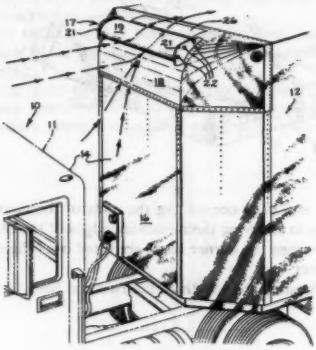
AIR RESISTANCE REDUCING ASSEMBLY FOR TRUCKS

Richard D. Markland, Cupertino, Calif., assignor to Consolidated Freightways, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 385,896, Jun. 7, 1982, abandoned. This application Feb. 14, 1984, Ser. No. 580,111

Int. Cl.[4] B62D *35/00*

U.S. Cl. 296—1 S 4 Claims



1. An air resistance assembly for use in combination with tandemly coupled vehicles, one of said vehicles being a hauling vehicle, another of said vehicles being a trailing vehicle, said hauling vehicle and said trailing vehicle each normally having a drag following therebehind serving to act upon and tend to retard the vehicle movement through air, said drag acting parallel and opposite to the direction of movement of said vehicles, said trailing vehicle including a front wall and a top panel, air deflector means having leading and trailing edges disposed transversely of the direction of forward movement of said vehicles and carried at an upper leading end portion of said trailing vehicle, said deflector overlying the surface of said upper leading end portion while remaining disposed respectively behind and below the plane of said front wall and said top panel, said air deflector means being formed and disposed to deflect air to pass therebeneath adjacent the surface of said upper leading end portion and along the top of said trailing vehicle, the last named said means serving to evacuate sufficient air from behind the hauling vehicle to substantially reduce said drag acting thereon.

4,553,783

MOTOR VEHICLE WITH ITS BODY IN THE FORM OF A VOLUMETRIC SHELL OF RESILIENT MATERIAL

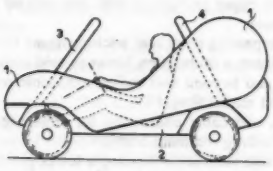
Giuseppe Lagana, Via Fiano n. 14, Torino, Italy

Filed Mar. 8, 1983, Ser. No. 473,614

Claims priority, application Italy, Mar. 19, 1982, 67352 A/82

Int. Cl.[4] B62D *29/04*

U.S. Cl. 296—31 P 2 Claims



1. A motor vehicle comprising a load-bearing base which houses a rear engine of the vehicle, and on the load-bearing base a soft body which has in its center a concavity for seats for the driver and passenger, said body being entirely of molded expanded soft cellular material, and roll bars fixed rigidly to said base, there being a forward said roll bar which embraces a wind screen of the vehicle.

4,553,784

LINKAGE ARRANGEMENT FOR A CONVERTIBLE TOP

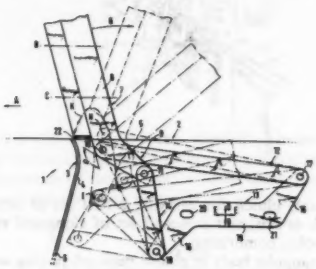
Werner Trenkler, Asperg, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Dec. 6, 1982, Ser. No. 447,101

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1981, 3148849

Int. Cl.[4] B60J *7/12*

U.S. Cl. 296—107 14 Claims



1. A linkage arrangement for a convertible top for a passenger motor vehicle, the top having a main roof column, the arrangement comprising a plurality of lever means for operably displacing the main roof column between a first position associated with an up position of the top and a second position associated with a down position of the top, the main roof column including a lever section having pivot means and joint means for connection of the plurality of lever means, the plurality of lever means including a first guide lever means pivotally connected at one end to said pivot means and at a second end to a body of said vehicle and a second guide lever means pivotally connected at one end to said joint means and at a second end to the body of said vehicle, the second end of said first guide lever means being pivoted about a pivot axis fixed relative to the body of the vehicle, said first guide lever means being disposed generally horizontally and said second guide lever means being disposed generally vertically when said top is in the up position, said joint means moving from one side of an imaginary line connecting the pivot means and the point at which the second end of the second guide lever means is pivotally connected to the body of the vehicle to an opposite side of the imaginary line when the main roof column is displaced from said first position to said second position, said plurality of lever means controlling movement of said main roof column, when said main roof column is displaced from said first position to said second position, including moving the main roof column initially upwardly and subsequently downwardly such that said main roof column is recessed within said vehicle body.

4,553,785

LOUNGE CHAIR COVER

George B. Duke, Jr., and S. Mark Pierce, both of 1677 Dylan Dr., Virginia Beach, Va. 23464

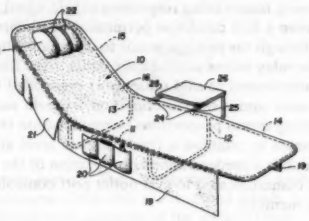
Filed Sep. 22, 1983, Ser. No. 534,608

Int. Cl.[4] A47C *31/10*

U.S. Cl. 297—229 1 Claim

1. A cover for a folding lounge chair comprising an elongated body portion of textile fabric of a shape and size to completely cover the top surfaces of a folding lounge chair, opposite end pockets on the bottom of the body portion

formed by panels of flexible sheet material and having open interior ends in opposing relationship toward the longitudinal center of the body portion, said pockets being closed at their outer ends and sides and the pockets conforming to the shape of corresponding end portions of said body portion, opposite side free-hanging skirts on the body portion and having utility



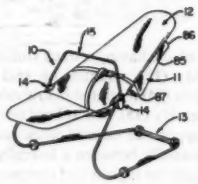
pockets thereon which are open at their tops when the skirts are hanging substantially vertically at opposite sides of the body portion, and the body portion having a pair of slits formed therethrough in longitudinally spaced relationship near one side thereof adapted to receive support arms of an attachable side table and a pair of spaced head pillow support straps attached near one end of the body portion.

4,553,786

INFANT SEATING AND LOUNGE UNIT

William Lockett, III, 9902 W. Layton Ave., Littleton, Colo. 80123, and Edward D. Oliver, Manchester, N.H., assignors to William Lockett, III, Littleton, Colo.

Filed Aug. 10, 1983, Ser. No. 521,653
Int. Cl.[4] A47C *1/12*
U.S. Cl. 297—440 **19 Claims**



1. An infant chair comprising:

upper and lower frame members, said lower frame member having a substantially horizontal ground-engaging portion with opposite sides extending forwardly from a common cross member, and upwardly and rearwardly inclined portions at forward ends of said sides of said lower frame, said upper frame having a back and seat support portion and a lower leg support portion; and

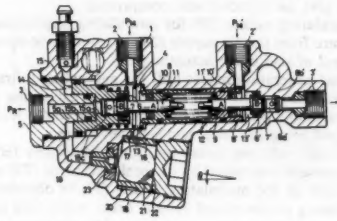
releasable connector means releasably interconnecting upper extremities of said inclined portions of said lower frame to said back and seat and leg support portions whereby said back and seat support portions incline rearwardly and upwardly from their connection to said inclined portions and said leg support portion inclines forwardly from its connection to said inclined portion, a body having spaced longitudinally extending openings therein, each of said inclined portions and said support portions terminating in connecting ends releasably insertable into said openings, said leg support portion having connecting ends inserted into one of said openings and said inclined portions in said back and seat support portions having connecting ends insertable into opposite ends of the other of said longitudinal openings, and a covering positioned over said back and seat support portion and said leg support portion.

4,553,787

VEHICLE DECELERATION SENSING TYPE TWO-SYSTEM LIQUID PRESSURE CONTROL VALVE

Michio Moriya, Hyogo, Japan, assignor to Sumitomo Electric Industries, Ltd., Japan

Filed Nov. 29, 1983, Ser. No. 555,924
Int. Cl.[4] B60T *8/26*
U.S. Cl. 303—6 C **6 Claims**



1. A vehicle deceleration sensing type two-system liquid pressure control valve, comprising:

two liquid pressure systems, each having a liquid pressure path;

two reducing valve mechanisms arranged coaxially in a valve body, said mechanisms having valve seats at opposed ends;

a set spring disposed between plungers of said two reducing valve mechanisms in such a manner as to move said plungers away from each other;

an inertial valve communicating with a liquid pressure path of one of said two systems; and

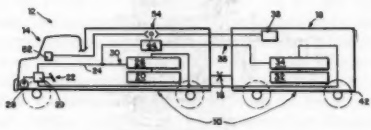
a liquid-pressure-operated piston which, as a sealed liquid pressure of a liquid seal chamber is increased by said inertial valve, moves one of said plungers of said reducing valve mechanisms to vary the length of said set spring.

4,553,788

AUTOMATIC AIR BRAKE CONTROL

Frank R. Smith, 606 Osage Ct., San Jose, Calif. 95123

Filed Jun. 29, 1984, Ser. No. 626,301
Int. Cl.[4] B60T *13/00, 8/18*
U.S. Cl. 303—7 **9 Claims**



1. In a braking apparatus (10) for an articulated vehicle (12) having a towing vehicle (14) attached across an articulated joint (16) to a towed vehicle (18) which is adapted to carry a load, said towing vehicle (14) having a towing vehicle brake system (20) which brakes said towing vehicle (14) in an amount determined by the pressure of air supplied thereto, an air supply (28), an operator-controlled brake actuator (22) adapted to control the pressure of air supplied to said towing vehicle brake system (20), a towing vehicle brake valve (26) movable between a first towing vehicle brake valve position which applies pressure to the towing vehicle brake system (20) and a second towing vehicle brake valve position which prevents application of pressure to the towing vehicle brake system (20) and being biased into a respective one of said first and second towing vehicle brake valve positions, means (30) for applying

the pressure controlled by the brake actuator (22) in opposition to the biasing of the towing vehicle brake valve (26), the towed vehicle (18) having a towed vehicle brake system (32) which brakes the towed vehicle (18) in an amount determined by the pressure of air supplied thereto, a towed vehicle brake valve (34) movable between a first towed vehicle brake valve position which applies pressure to the towed vehicle brake system (32) and a second towed vehicle brake valve position which prevents application of pressure to the towed vehicle brake system (32) and being biased into a respective one of said first and second towed vehicle brake valve positions, and means (36) for applying the pressure controlled by the brake actuator (22) in opposition to the biasing of the towed vehicle brake valve (34), an improvement comprising:

modulating means (29) for modulating application of pressure from the air supply (28) in response to operator control of said brake actuator (22);

signal generating means (38) for generating a first signal in response to the weight of the load exceeding a selected value and a second signal in response to the weight of the load being less than said selected value;

pressure reducing means (44) for substantially reducing the pressure controlled by the brake actuator (22) and modulated by the modulating means (29) in opposition to the biasing of the towed vehicle brake valve (34) in response to generation of the second signal by the signal generating means (38) and for not substantially reducing the pressure controlled by the brake actuator (22) and modulated by the modulating means (29) in opposition to the biasing of the towed vehicle brake valve (34) in response to generation of the first signal by the signal generating means (38); and

manual overriding means (52) for manually overriding the pressure reducing means (44) when the signal generating means (38) generates the second signal for supplying substantially unreduced pressure controlled by the brake actuator (22) and modulated by the modulating means (29) in opposition to the biasing of the towed vehicle brake valve (34).

4,553,789

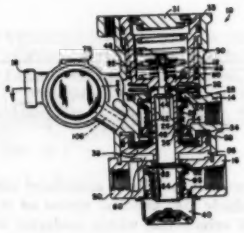
DUAL BRAKE VALVE WITH BRAKE PROPORTIONING

James G. Pugh, Elyria, and Richard W. Carmichael, Parma, both of Ohio, assignors to Allied Corporation, Morristown, N.J.

Filed May 10, 1984, Ser. No. 608,688

Int. Cl.[4] B60T *11/12*

U.S. Cl. 303—54 **11 Claims**



1. Dual circuit brake valve having a pair of inlet ports, a pair of outlet ports, a pair of valve members in said housing, one of said valve members controlling communication between one of said inlet ports and a corresponding outlet port, the other valve member controlling communication between the other inlet port and its corresponding outlet port, manually actuated means for controlling one of said valve members, fluid pressure responsive relay means for operating the other valve member, passage means communicating the outlet port controlled by said one valve member with said fluid pressure responsive relay means for causing the latter to operate said other valve member in response to pressure changes at said outlet port controlled by said one valve member to thereby establish a corresponding pressure level at the outlet port controlled by the other valve member, and pressure proportioning means controlling communication through said passage means, said pressure proportioning means including a control port on said housing communicated with a signal pressure, said pressure proportioning means being responsive to said signal pressure to shift between a first condition permitting uninhibited communication through the passage means to communicate a pressure level to the relay means substantially equal to the fluid pressure level communicated to said outlet port controlled by the one valve member and a second condition wherein said pressure proportioning means proportions communication through said passage means to establish a fluid pressure level at said relay means which is a predetermined poroportion of the fluid pressure level communicated to said outlet port controlled by said one valve member.

4,553,790

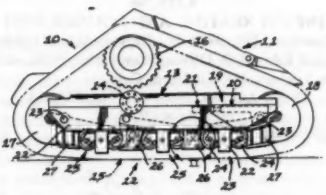
FLEXIBLE DIRT GUARD WITH BACK-UP PLATE FOR TRACK-TYPE VEHICLE

Roger L. Boggs, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 29, 1982, Ser. No. 648,233

Int. Cl.[4] B62D *55/10, 55/16*

U.S. Cl. 305—12 **11 Claims**



1. In a track-type vehicle having a track roller frame (13), an endless track assembly (15) mounted on said frame (13), a plurality of track rollers (24) mounted below said frame (13) to engage said track assembly (15), and at least one flexible guard (26) mounted at its upper end on said track roller frame (13) and suspended downwardly between a laterally adjacent pair of rollers (24) to prevent the ingress and compaction of materials within the confines of said track assembly (15), the improvement comprising:

backup means (35) for preventing inward movement of said flexible guard (26) substantially within the confines of said track assembly (15) when said track assembly (15) separates from said track roller frame (13) during operation of said vehicle (10) to define a space (34) between said pair of track rollers (24) and said track assembly (15) that is greater than adjacent outer dimensions of said flexible guard (26).

4,553,791

LINKED CHAIN

Ian L. Blair, Dunston, England, assignor to George Blair Public Limited Company, Newcastle upon Tyne, England

Filed Oct. 12, 1983, Ser. No. 541,103

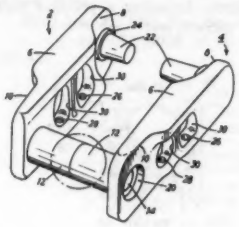
Claims priority, application United Kingdom, Oct. 15, 1982, 8229549

Int. Cl.[4] B62D *55/20*

U.S. Cl. 305—39 **9 Claims**

1. A length of chain including a plurality of interconnected chain links in which the links each comprise a pair of opposed link parts, the link parts including side portions and, projecting substantially perpendicularly inwardly of said side portions adjacent the end regions thereof, pin portions and bush por-

tions, the opposed bush portions of a link abutting one another and the bore of a bush portion being continued through the



associated side portion, the arrangement being such that opposed pin portions of one link are received within, to be rotatable in, opposed bush portions of the adjacent link.

4,553,792

STRUCTURAL SLIDE BEARING

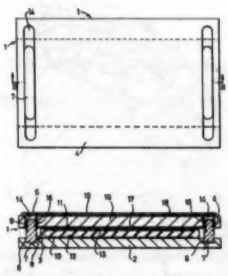
William E. Reeve, Hemingford Grey, England, assignor to Dixon International Limited, England

Filed Oct. 3, 1983, Ser. No. 538,102

Claims priority, application United Kingdom, Oct. 1, 1982, 8228063

Int. Cl.⁴ F16C *29/02*

U.S. Cl. 308—3 R **4 Claims**



1. A structural bearing comprising: a bottom bearing plate and a top bearing plate; sliding surfaces in mutual sliding contact and fixed against horizontal movement relative to the bottom bearing plate and the top bearing plate respectively; one of the bearing plates being provided with one or more spigots engaging in slots in the other bearing plate, the spigot(s) substantially preventing relative rotation of the bearing plates about a vertical axis and substantially preventing relative horizontal movement of the plates in one direction but allowing relative horizontal movement of the plate in a direction normal thereto, wherein there is disposed between the top and bottom bearing plate at least one layer of rubber or other elastomeric material for absorbing relative rotational movement about a horizontal axis between the top and bottom bearing plates.

4,553,793

RECIRCULATING-BALL LINEAR BEARING WITH A GUIDE RAIL

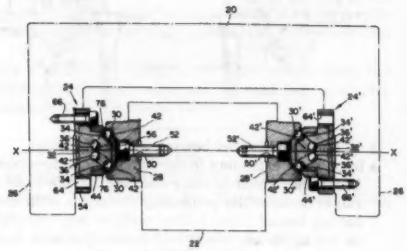
Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Setagaya-Ku, Tokyo, Japan

Filed Mar. 3, 1983, Ser. No. 471,736

Claims priority, application Japan, Mar. 16, 1982, 57-41241

Int. Cl.⁴ F16C *29/06*

U.S. Cl. 308—6 C **9 Claims**



1. A recirculating-ball linear bearing apparatus for use in moving an object along a rectilinear path with a minimum of friction, comprising:

a guide rail having a pair of divergent surfaces formed longitudinally thereon, the divergent surfaces each having a raceway formed thereon of arcuate cross section extending longitudinally of the guide rail;

a bearing body having a pair of convergent surfaces opposed to the pair of divergent surfaces of said guide rail, the convergent surfaces each having a raceway formed thereon of arcuate cross section extending longitudinally of the bearing body in opposed relation to one of the raceways on the guide rail, the bearing body also having a pair of return passageways extending longitudinally therethrough;

a pair of end covers at the opposite ends of the bearing body each having formed therein two hairpin grooves each intercommunicating one raceway on the bearing body and one return passageway in the bearing body;

rolling balls capable of recirculating through respective closed paths comprising the raceways on the bearing body, the return passageways in the bearing body, and the hairpin grooves in the end covers, the balls while rolling along the raceways on the bearing body also making rolling engagement with the raceways on the guide rail to allow the bearing body to travel along the guide rail; and

a cage integral with said pair of end covers and disposed on the bearing body for guiding the rolling balls as they roll between the raceways on the bearing body and the raceways on the guide rail, and the cage being transversely split into a pair of segments, such that

(a) a line of contact of each ball with respect to the associated raceways in opposed relation on the bearing body and on the guide rail converges toward the inside of the bearing body at an angle approximately 45 degrees with respect to a longitudinal central plane between the raceways on the bearing body; and

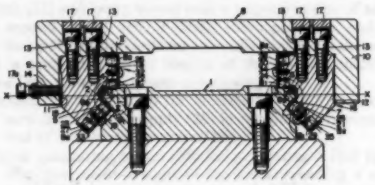
(b) the return passages in the bearing body are positioned close to the longitudinal central plane in a manner such that they are disposed near the contact line of each ball and such that the hairpin grooves in each cover do not cross the longitudinal central plane.

4,553,794

LINEAR SLIDE ROLLER BEARING UNIT

Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Setagaya-Ku, Tokyo, Japan

Filed May 24, 1984, Ser. No. 613,618
Claims priority, application Japan, May 26, 1983, 58-92017
Int. Cl.⁴ F16C *29/06*
U.S. Cl. 308—6 C **9 Claims**



1. A linear slide roller bearing unit comprising:

a track shaft extending in the longitudinal direction of said linear slide roller bearing unit and having right and left ridges horizontally projecting therefrom with each ridge having loaded roller rolling surfaces respectively formed on the upper and lower side surface portions thereof;

a movable table constituted by along block member disposed so as to straddle said track shaft, said movable table having longitudinal recesses respectively formed in the opposing inner surfaces of skirt portions thereof;

a pair of right and left bearing bodies each constituted by a long block member which is screwed to the corresponding recess in said movable table, each bearing body having an upper and a lower guide ridge projecting from each said block body toward said track shaft, each said upper and lower guide ridge having one side surface thereof defined as a loaded roller rolling surface confronting the corresponding loaded roller rolling surface of said track shaft and the other side surface defined as a non-loaded roller rolling surface;

barrel-shaped rollers adapted to be recirculated along said loaded roller rolling surfaces and non-loaded roller rolling surfaces of said bearing bodies and to come in contact with said loaded roller rolling surfaces on said track shaft when rolling along said loaded roller rolling surfaces on said bearing bodies; and

a roller retainer attached to each of said guide ridges so as to face the corresonding inner surface portion of the associated bearing body and adapted to guide said rollers so that they can recirculate through the space defined between said roller retainer and inner surface portion.

wherein one group of said rollers in the state of serving as loaded rollers are brought into contact with said loaded roller rolling surfaces on said track shaft at a contact angle of about 90° with respect to the horizontal axis, while the other group of said loaded rollers are brought into contact with said loaded roller rolling surfaces on said track shaft at a contact angle of about 45° with respect to said horizontal axis.

4,553,795

MOLD SUPPORTING ARRANGEMENT

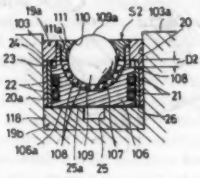
Shozo Takagi, 950, Nakayama-cho Nishi 2-chome, Nara, Japan

Division of Ser. No. 364,676, Apr. 2, 1982, Pat. No. 4,459,909.
This application Mar. 30, 1984, Ser. No. 595,300
Int. Cl.⁴ F16C *17/00, 19/00, 21/00, 29/00*
U.S. Cl. 308—6 R **3 Claims**

1. A mold supporting arrangement for a press comprising:

a plurality of elongated blocks each of which is independently attachable to and detachable from any one of a plurality of spaced mounting slots formed in a press bolster;

a plurality of spaced bearing units incorporated in each of said elongated blocks, each of said bearing units including a seat body having a hemispherical concave seat formed in a top wall thereof, a layer of small steel balls disposed on said concave seat, and a main large ball seated on said layer of small steel balls for free rotation in every direction, each of said elongated blocks including a pressure fluid passage formed internally thereof, and



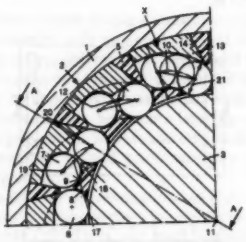
a plurality of piston-cylinder arrangements arranged within each of said elongated blocks in cooperation with said fluid passage to apply pressure fluid upon each of said bearing units for limited vertical movement of said bearing units so that a top part of said large main ball of each of said bearing units can protrude slightly above an upper surface of said elongated block.

4,553,796

MECHANISM INCLUDING A BEARING ASSEMBLY FOR MEMBERS ADAPTED FOR LONGITUDINAL MOVEMENT RELATIVE TO ONE ANOTHER

Lothar Walter, Schweinfurt; Walter Reith, Bad Bocklet, and Otmar Winkler, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 23, 1984, Ser. No. 633,406
Claims priority, application Japan, Jul. 23, 1983, 58-3326601
Int. Cl.⁴ F16C *31/06, 29/06*
U.S. Cl. 308—6 C **8 Claims**

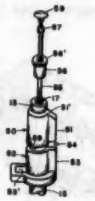


1. A ball bearing for longitudinal movement on a shaft member or the like comprising a cage which at least partially surrounds the shaft and disposed in the bore of a housing, a raceway element (13) supported in the bore of the housing having a raceway surface for a plurality of axially extending circumferentially spaced guide members disposed adjacent the shaft member, each guide member including arcuate guide tracks (8, 9) for the loaded and unloaded balls, deflector tracks joining adjacent pairs of said guide tracks, a longitudinally extending fillet (18) at the juncture of the radially outwardly directed arcuate ball guide track (8) and the arcuate circumferentially directed guide tracks (9) for the loaded balls, said fillets (18) projecting between adjacent rows of loaded and unloaded rows of balls approximately as far as the height of a line through the centers of the balls (6, 7) between two guide tracks (8, 9) of each ball guide and formed on the cage in such a way that the radius of curvature of each ball guide passing through the centers of the balls of the deflector tracks is equal to or slightly larger than half the diameter (21) of the balls.

4,553,797
MOUNTING BRACKET

Konrad H. Marcus, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Jan. 21, 1982, Ser. No. 341,284
Int. Cl.[4] H01R *39/00*
U.S. Cl. 339—22 15 Claims

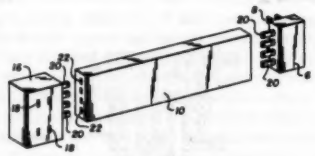


4. A visor rod and mounting bracket assembly comprising:
a mounting bracket having flange means including means for mounting said flange means to a vehicle and a support collar integrally formed with said flange means and defining a generally cylindrical opening for securing a rod end therein;
a visor rod having a cross section shaped to permit extension of an end thereof into said opening of said collar, said rod including means defining a radially extending flat for locking said rod within said collar; and
locking means having one end coupled to said flange means and extending to lockably engage said flat of said rod when positioned within said cylindrical opening for holding said rod therein.

4,553,798
ELECTRICAL OUTLET

Peter Murphy, 5027 Erin Way, Delta, British Columbia, Canada (V4M 1K2)

Filed Apr. 4, 1984, Ser. No. 596,610
Int. Cl.[4] H01R *41/00*
U.S. Cl. 339—9 R 5 Claims

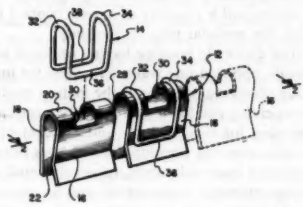


1. Apparatus to provide a remote outlet from a master electrical outlet provided with electrical conducting recesses connected to an electrical power source, the apparatus comprising:
a plug member;
conductor prongs on the plug member to engage the recesses in the master outlet;
conductor attachment means formed on the plug member, in electrical contact with the conductor prongs;
a limb adapted to be attached to the plug member;
conductors in the limb, each conductor adapted to be in electrical contact with one conductor prong of the plug member;
conductor attachment means in the limb to releasably engage the conductor attachment means at the master outlet and in electrical contact with the conductors in the limb;
a remote outlet;
further conductor attachment means at the distal end of the limb, in electrical contact with the conductors in the limb;
conductor recesses in the remote outlet, each recess adapted to be in electrical contact with a conductor in the limb;
conductor attachment means in the remote outlet corresponding to the further conductor attachment means at said distal end of the limb and in electrical contact with the recesses in the remote outlet, whereby the limb may be disconnected from the plug member and the remote outlet;
whereby a secondary outlet is provided remote from but duplicating the master outlet and adapted to be in electrical contact with the master outlet.

4,553,799
ELECTRICAL CONNECTOR CLIP ASSEMBLY

Paul M. Deters, 2105 Harkness St., Manhattan Beach, Calif. 90266

Filed Jul. 11, 1983, Ser. No. 512,905
Int. Cl.[4] H01R *31/08*
U.S. Cl. 339—19 1 Claim



1. In combination with a plurality of elongated spaced-apart terminal posts, an electrical connector assembly for electrically connecting at least one said terminal post to another said terminal post, said electrical connector assembly comprising:
an elongated electrical conducting clip member defining in lateral cross-section a pair of spaced-apart leg members, said leg members having facing inner surfaces, a gap located between said facing inner surfaces, an apex section, said leg members being attached to said apex section, said apex section including a plurality of spaced-apart holes, a said terminal post to extend through a said hole with said facing inner surfaces being in contact with said terminal posts, said clip member being constructed of substantially pure copper thereby having a high electrical conductivity but lacking in resiliency to be biased into tight engagement with said terminal posts; and
means connected to said clip member for exerting a continuous bias against said leg members forcing said leg members into tight engagement with said terminal posts, said means being removably connected to said clip member, said means comprising a continuous wire member, said wire member defining a pair of U-shaped members located in a spaced-apart relationship, each said U-shaped member having a pair of substantially parallel arms, the outer end of one said arm of one said wire member being connected by a first connecting member to the outer end of an arm of the other said U-shaped wire member, the outer end of the remaining said arm of said one U-shaped wire member being connected by a second connecting member to the outer end of the remaining said arm of said the other said U-shaped wire member, said first connecting member being parallel to said second connecting member, said first

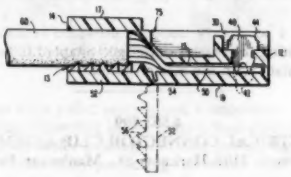
connecting member to be in contact with one said leg member with the other said connecting member being in contact with the other said leg member with each said U-shaped member being located on a different side of one of said holes.

4,553,800

LOW PROFILE MODULAR PLUG

Charles E. Bogese, Roanoke, Va., assignor to Virginia Patent Development Corp., Roanoke, Va.

Filed Oct. 15, 1982, Ser. No. 434,639
Int. Cl.⁴ H01R *11/00*
U.S. Cl. 339—59 M **21 Claims**



1. A modular plug for terminating a cable having an outer jacket covering a plurality of conductors, and for making electrical contact with a mating modular jack, the mating modular jack including a plug-receiving opening with an arm-receiving recess and a plurality of spring contact members in the opening, the modular plug comprising:

a unipartite dielectric housing having opposed top and bottom walls, opposed side walls, a free end for insertion into the plug-receiving opening of the mating modular jack, a cable-receiving end having a relatively large cable-receiving opening for receiving the outer jacket of the cable, said cable-receiving opening defined by a floor, a ceiling and opposed inner side walls, relatively small conductor-receiving openings adjacent to and in communication with said cable receiving opening and extending to said free end for receiving and enclosing the individual conductors of the cable, said free end also including terminal-receiving slots extending through said top wall to said conductor-receiving openings;

a latching arm mounted on one of said side walls and extending angularly rearwardly from said free end of said housing for releasably mating with the arm-receiving recess in the modular jack;

substantially planar, electrically conductive contact terminals extending through said terminal-receiving slots and having insulation-piercing tangs at the lower portion thereof for terminating the conductors of the cable and an upper portion for making electrical contact with the spring contact members of the modular jack; and

said bottom wall including means integrally formed therein for providing access to the cable in said cable-receiving opening, said access means comprising a door pivotally connected to said housing and forming when closed said floor of said cable-receiving opening, said access means including integral locking means for securing said door in its closed position.

4,553,801

LOCKING AND POLARIZING HEADER

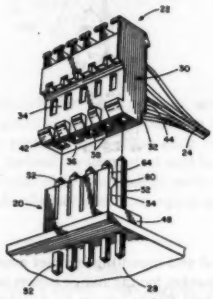
Robert B. Zajeski, Hickory Hills, Ill., assignor to Panduit Corp., Tinley Park, Ill.

Filed Sep. 23, 1982, Ser. No. 422,049
Int. Cl.⁴ H01R *9/22*
U.S. Cl. 339—59 M **2 Claims**

1. An elongate header for mounting a connector to interconnect wires terminated in said connector and corresponding circuits of another electrical component such as a circuit board, said header comprising:

a series of insulative L-shaped segments joined by frangible interconnection means whereby a group of segments can be broken away by hand from the remainder of said header, each segment including a base having an aperture for receiving a header post and further including a resilient, deflectable wall extending from said base, said group of segments extending in a generally longitudinal direction; and

a header post disposed in each aperture, wherein each aperture has a first dimension in said longitudinal direction of



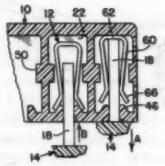
said header substantially complimentary to a corresponding cross-sectional dimension of said header post, and each aperture has a dimension transverse to said longitudinal direction of said header which is less than a corresponding cross-sectional dimension of said header post whereby any force applied by said posts to said header is directed transversely to said longitudinal direction and any resulting slight bowing in each segment due to said force is non-cumulative with that in other segments to preclude substantial longitudinal bowing of said header, and wherein said transverse dimension of each aperture is defined by opposing convexities.

4,553,802

MODULAR BRIDGING CLIP

William E. Ruehl, Wheeling, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Continuation of Ser. No. 289,022, Aug. 3, 1981, abandoned. This application Jul. 14, 1983, Ser. No. 513,793
Int. Cl.⁴ H01R *13/62*
U.S. Cl. 339—74 R **12 Claims**



1. A modular bridging device for use with a telecommunications terminal block having plural rows of contact terminals, said device including non-conductive housing means having at least one compartment therein and a discrete generally U-shaped electrically conductive bridging clip installed in each said at least one compartment, each said bridging clip including a bight portion and pair of resilient legs defining a throat adapted to receive a contact terminal, each said at least one compartment having interior wall means for loosely retaining

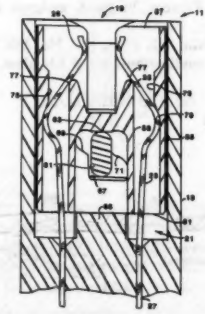
in an inverted manner the bridging clip installed therein and for permitting said bridging clip to slide in a generally parallel direction to said pair of legs, each said at least one compartment including slot means in communication with said interior wall means and in general alignment with and providing access to said throat of the bridging clip retained therein, and cam means carried by said interior wall means adjacent to said slot means in each said at least one compartment for engaging and spreading the legs of the bridging clip retained therein in direct response to said housing being moved away from said terminal block in a generally parallel direction to said pair of legs of each of said bridging clips thereby facilitating removal of said device from said terminal block.

4,553,803

ELECTRICAL CONNECTOR

Scott J. Lapraik, Pleasantville, and Wayne A. Becker, Meadville, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 7, 1984, Ser. No. 607,840
Int. Cl.[4] H01R *13/629*
U.S. Cl. 339—74 R **7 Claims**



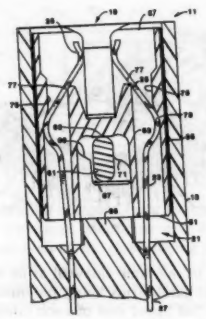
1. A zero or low insertion force connector for making electrical connection between a circuit board and an external circuit comprising an elongated outer housing having a channel extending in a longitudinal direction, a plurality of contacts mounted in said outer housing on either side of said channel to form a pair of rows of contacts, said contacts having lower end portions projecting exteriorly of said outer housing through the bottom of said channel and upper portions interior of said outer housing adapted to contact opposite sides of a circuit board, an inner housing mounted within said outer housing for movement inwardly and outwardly along a vertical direction normal to said longitudinal direction, said inner housing having a pair of sidewalls and an upright intermediate said sidewalls, each of said rows of contacts being intermediate said upright and a respective side wall, an elongated cam disposed in said channel, said inner housing including a first cam engaging means and said outer housing including a second cam engaging means whereby said inner housing is movable from a first position to a second position when said cam is actuated, each of said sidewalls including an inwardly facing protrusion adapted to engage contacts in a respective row and urge engaged contacts toward a circuit board when said housing is in one of said positions, said upright including a pair of contact engaging portions, each portion being adapted to engage contacts in a respective row and urge said contacts away from a circuit board when said inner housing is in the other of said positions.

4,553,804

ELECTRICAL CONNECTOR

Scott J. Lapraik, Pleasantville, and Wayne A. Becker, Meadville, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 7, 1984, Ser. No. 607,841
Int. Cl.[4] H01R *13/629*
U.S. Cl. 339—74 R **5 Claims**



1. A zero or low insertion force connector for making electrical connection between a circuit board and an external circuit comprising: an elongated outer housing having a channel extending in a longitudinal direction; a plurality of contacts mounted in said outer housing on either side of said channel, said contacts having lower end portions projecting exteriorly of said outer housing through the bottom of said channel and upper portions interior of said outer housing adapted to contact opposite sides of a circuit board; an inner housing mounted within said outer housing for movement upwardly and downwardly in a vertical direction normal to said longitudinal direction; and ovally shaped cam having an axis or rotation extending in said longitudinal direction, said cam being adapted to be rotated from a first position presenting a narrow cross-section in the vertical direction to a second position presenting a wider cross-section in the vertical direction; a pair of first cam engaging surfaces and a pair of second cam engaging surfaces; said inner and outer housing each including a respective first and second cam engaging surface, said first cam engaging surfaces being diametrically opposed in said vertical direction and being adapted to be moved apart when said cam is rotated from said first position to said second position, said second surfaces being laterally displaced from said first surfaces along the direction of rotation of said cam and adapted to be moved apart when said cam is rotated from said second position to said first position, said inner housing including means adapted to engage and urge said upper portions of said contacts apart when said cam is rotated from one of said positions, whereby removal or insertion of a circuit board is permitted.

4,553,805

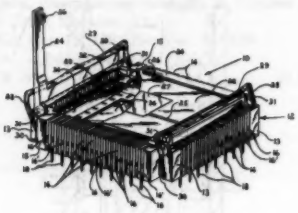
CHIP CARRIER CONNECTOR

Paul W. Aikens, Etters, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 23, 1984, Ser. No. 573,215
Int. Cl.[4] H01R *9/09*
U.S. Cl. 339—75 MP **6 Claims**

1. In an electrical chip carrier connector for connecting a semiconductor chip to a printed circuit board having a dielectric frame with two pairs of oppositely facing sidewalls, each sidewall having a plurality of vertically extending slots, each sidewall further having a stepped shelf on an interior surface with the remainder of the interior surfaces of the sidewalls together defining a central enclosed cavity, a conductive spring member within each slot having an upper contact por-

tion exposed on the sidewall stepped shelf and a lower portion extending from the bottom of the sidewall, the improvement comprising a pair of compression springs, each having a lower and an upper end, each compression spring mounted at its lower end in a spring tension groove located on a lower side surface of each of the sidewalls of one pair of oppositely facing sidewalls, a pair of latch arms, each latch arm corresponding to one of the compression springs and pivotally mounted on an



upper side surface of the same sidewall as its respective compression spring, the latch arms being mounted in diagonally opposed positions, the upper end of each compression spring being positioned above the upper surface of the sidewall and remaining in constant contact under spring tension with its corresponding latch arm so that movement of the compression spring towards the central cavity causes the latch arm to move down and lock over the top surface of the semiconductor chip carrier.

4,553,806

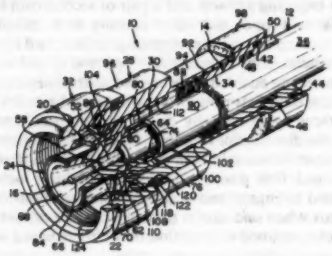
COAXIAL ELECTRICAL CONNECTOR FOR MULTIPLE OUTER CONDUCTOR COAXIAL CABLE

Edgar W. Forney, Jr., Harrisburg, and Richard S. Hogendobler, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 15, 1983, Ser. No. 475,572

Int. Cl.⁴ H01R *4/00*

U.S. Cl. 339—94 C **17 Claims**



8. A coaxial electrical connector of the type wherein for connection with a center conductor and multiple outer conductors of a coaxial cable, the connector comprises a center contact member securable onto the center conductor and positionable within a bore of an inner dielectric member of an inner contact assembly, an inner contact member of the inner contact assembly to which is electrically connectable an inner conductor of the multiple outer conductors, an outer contact assembly including an outer dielectric member having a bore in which the inner contact assembly is disposed and an outer contact member to which an outer conductor of the multiple outer conductor is electrically connectable, the connector comprising

a crimping and sealing ferrule positionable onto an outer jacket of the cable and having a sealing member disposed within an inner recess of the crimping and sealing ferrule forming a seal between the ferrule and the outer jacket of the cable;

a crimping ferrule member crimpably connecting the inner conductor of the multiple outer conductors to the inner contact member of the inner contact assembly and the inner contact assembly containing the center contact member terminated to the center conductor and positioned in the bore of the inner dielectric member and the inner conductor terminated to the inner contact member being positioned within the bore of the outer dielectric member and the crimping and sealing ferrule sealingly positioned on the outer jacket of the cable being positioned within the outer contact member and the outer contact member being crimpable onto the crimping and sealing ferrule with the outer conductor captured therebetween;

sealing means disposed between said crimping and sealing ferrule and said crimping ferrule member for sealing the same; and wherein

a gold plated sealing ring is press-fitted into a recess on a front surface of the outer contact member to secure said outer dielectric member in said outer contact member and to electrically connect with a complementary coaxial electrical connector.

4,553,807

SEPARABLE ELECTRICAL CONNECTORS WITH FLUID ESCAPE PATH

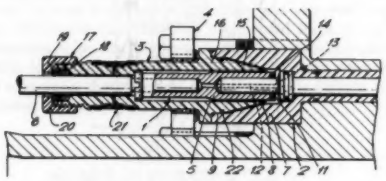
Michael R. Cane, Prescot, England, assignor to BICC Public Limited Company, England

Filed Mar. 12, 1984, Ser. No. 588,707

Claims priority, application United Kingdom, Mar. 31, 1983, 8308978

Int. Cl.⁴ H01R *13/523*

U.S. Cl. 339—94 R **4 Claims**



1. A separable electric connector comprising three relatively movable parts, namely:

a socket part formed about an axis and which, prior to the assembly of the parts, is to be filled with a viscous insulating fluid;

a plug part having

(a) a tubular member which is closed at one end and surrounds the socket part with a clearance when the connector is assembled and

(b) a male member upstanding from the closed end of the tubular member to enter the socket part and make at least one electrical contact with it;

there being at least one passage allowing flow of the viscous insulating fluid from the socket part into the tubular member adjacent its closed end as the socket part and the plug part are brought together; and

a sleeve part surrounding the socket part, axially movable relative thereto and capable of entering the tubular member to displace the viscous insulating fluid therefrom; said connector further comprising:

means for forming a seal between the tubular member and the sleeve part after the space between them has been filled with the fluid but before they are fully assembled;

and an escape path other than between the tubular member and the sleeve part which permits passage of fluid from said space to the exterior of the connector as said three

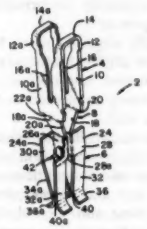
relatively movable parts are brought from a seal-forming position to a fully-assembled position, the fluid to be forced through the escape path by axial movement of the sleeve part relative to the socket part and into the tubular member.

4,553,808

ELECTRICAL TERMINAL INTENDED FOR MATING WITH A TERMINAL TAB

Charles H. Weidler, Lancaster, and George E. Trout, Etters, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 564,670, Dec. 23, 1983, abandoned.
This application Apr. 26, 1985, Ser. No. 727,193
Int. Cl.[4] H01R *4/24*
U.S. Cl. 339—97 R **4 Claims**



1. A stamped and formed electrical terminal of the type comprising a conductor-receiving portion and a contact portion, the conductor-receiving portion comprising first and second aligned flat plate-like members which are connected to each other, the plate-like members having aligned conductor-receiving slots so that a conductor can be moved laterally of its axis and into the conductor-receiving slots, the contact portion comprising first and second pairs of contact arms, the first pair of contact arms extending from the first plate-like member and the second pair of contact arms extending from the second plate-like member, and first and second transition sections between the first and second plate-like members and the first and second pairs of contact arms respectively, the terminal being characterized in that:

each transition section is flat and in inclined from its respective plate-like member towards a medial plane that is parallel to, and between, the first and second plate-like members, each transition section having convergently tapered side edges,

first and second U-shaped sections extend from the first and second transition sections, each U-shaped section comprising a web and sidewalls, the web of each U-shaped section extending from its associated transition section, the webs being on each side of the medial plane and the sidewalls extending in opposite directions away from the medial plane,

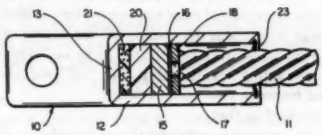
the first and second pairs of contact arms extending from the sidewalls of the first and second U-shaped section, the arms of each pair of contact arms having free ends and having opposed contact zones on their free ends whereby a terminal tab can be inserted between the contact zones of the first and second pairs of contact arms and the terminal tab will extend normal the medial plane.

4,553,809

ELECTRICAL CONNECTOR

Neil L. Holt, Foster City, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Sep. 24, 1984, Ser. No. 654,602
Int. Cl.[4] H01R *11/06*
U.S. Cl. 339—275 T **5 Claims**



1. An electrically conductive connector for electrical conductors comprising:

(a) at least one metallic tubular sleeve having an open end for receiving an electrical conductor and a closed end, the peripheral inner wall of the sleeve being pretinned;

(b) a slug of solder having a flux associated therewith, hermetically sealed within the sleeve proximate the closed end;

(c) a piston, capable of axial motion within the sleeve, positioned between the solder slug and the closed end;

(d) means which on application of heat sufficient to raise the temperature of the connector to a first temperature, T_1, the activation temperature of the flux, breaks the hermetic seal and permits the activated flux to expand and flow toward the conductor; and

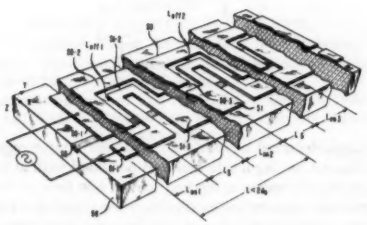
(e) pressuring means positioned between the piston and the closed end of the sleeve which, on application of heat sufficient to raise the temperature of the connector to a second temperature, T_2, which is higher than the first temperature and which is the melting temperature of the solder, exerts sufficient force on the piston to cause it to move toward the open end of the sleeve and to pressure the slug of solder toward the open end of the sleeve.

4,553,810

TRAVELING WAVE ELECTROOPTIC DEVICES

Rodney C. Alferness, Holmdel; Steven K. Korotky, Toms River, and Enrique A. J. Marcatili, Rumson, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 21, 1983, Ser. No. 487,249
Int. Cl.[4] G02B *5/174*
U.S. Cl. 350—96.14 **18 Claims**



1. A device comprising:

a substrate comprising electrooptic material;

first waveguiding means adapted for guiding electromagnetic radiation of optical wavelengths, such radiation to be referred to as the "optical signal", the first waveguiding means comprising at least one waveguide formed in the substrate, the waveguide to be referred to as the "optical waveguide"; and

second waveguiding means, disposed on the substrate, adapted for supporting a propagating electrical signal comprising a wavelength λ_m, the second waveguiding

means comprising a multiplicity of spaced sections, to be referred to as the "on" sections, that are disposed such that the propagating electrical signal does operatively interact with the optical waveguide by means of the electrooptic effect, such relationship to be referred to as an "electrooptically interacting" relationship, and further comprising at least one further section, to be referred to as the "off" section, that is disposed such that the propagating electrical signal does not operatively interact with the optical waveguide by means of the electrooptic effect, such relationship to be referred to as an "electrooptically noninteracting" relationship, the "off" section being located between two "on" sections;

characterized in that

each "on" section is substantially of length L_{on}, the at least one "off" section is substantially of length L_{off}, with

$$L_{off} > (1 - N_o/N_m)L_{on}$$

where:

N_o is the effective refractive index of the optical waveguide at the wavelength of the optical signal;

and:

N_m is the effective refractive index of the second waveguiding means at the wavelength λ_m of the electrical signal.

4,553,811

OPTOELECTRICAL COUPLING ARRANGEMENT

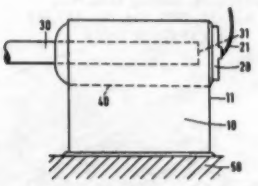
Reinhard Becker, deceased, late of Senden-Ay; Gudula Seber, legal representative, Bielefeld; Ulrich Becker, legal representative, Blaustein; Hans C. Becker, legal representative, Trier-Irsch; Gero Becker, legal representative, Sarstedt-Gödringen; Artur Müssigmann, Ehingen, and Anton Schurr, Senden-Wullenstetten, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 427,893

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1981, 3142918

Int. Cl.⁴ G02B 7/26

U.S. Cl. 350—96.20 **11 Claims**



1. Optoelectrical coupling arrangement comprising: a carrier element having a side face and provided with at least one trough-shaped recess extending to the side face; at least one optical fiber element fastened in the recess, having a longitudinal axis perpendicular to said side face, and presenting an end face positioned to lie in the region of said side face of said carrier element; and at least one photodetector having transverse dimensions smaller than that of said side face and fastened to said side face via opposed edges of said photodetector so that said photodetector is located within the boundaries of said side face, and having a light-sensitive region positioned parallel to said side face to receive a substantial portion of the light emanating from said end face of said optical fiber element, and wherein said carrier element comprises at least one electrical conductive path connected electrically with said photodetector.

4,553,812

PENETRATION ASSEMBLY FOR BRINGING AN OPTICAL FIBER CABLE THROUGH A VESSEL WALL

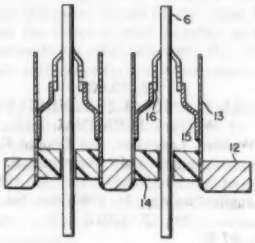
Tetsuya Kojiro, Kobe, and Jun Takeda, Akashi, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1983, Ser. No. 500,912

Claims priority, application Japan, Jun. 8, 1982, 57-99899

Int. Cl.⁴ G02B 7/16

U.S. Cl. 350—96.20 **11 Claims**



1. A penetration assembly for bringing optical fiber cable through a wall comprising:

first and second axially aligned sleeves having inner surfaces;

an optical fiber cable segment centrally disposed inside said first and second sleeves; said optical cable segment having opposite ends for being connected to optical fiber cables on opposite sides of a wall;

first and second open-ended flexible metal connectors, having respective annular cross-sectional areas and being concentrically disposed about said optical fiber cable segment, respectively inside said first and second sleeves; said first metal connector having first and second axially opposite metal connector ends, said first metal connector end having a first metal connector circumference surrounding said cable segment and rigidly secured over the entire extent thereof to said first sleeve, said second metal connector having third and fourth axially opposite metal connector ends, said fourth metal connector end having a second metal connector circumference surrounding said cable segment and rigidly secured over the entire extent thereof to said second sleeve; and

first and second open-ended glass connectors, having respective annular cross sections and being concentrically disposed about said optical fiber cable segment, respectively inside said first and second sleeves; said first glass connector having first and second axially opposite glass connector ends, said first and second glass connector ends having respective first and second glass connector circumferences surrounding said cable segment and respectively rigidly secured over the entire extents thereof to said second metal connector end and to said cable segment; said second glass connector having third and fourth axially opposite glass connector ends, said third and fourth glass connector ends having respective third and fourth glass connector circumferences surrounding said cable segment and being respectively rigidly secured over the entire extents thereof to said third metal connector end and to said cable segment.

4,553,813

FIBER OPTIC CONNECTOR SYSTEM FOR INTEGRATED CIRCUIT MODULES

James L. McNaughton, Hyannis, Mass., and James R. Petrozello, Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 16, 1983, Ser. No. 494,760

Int. Cl.⁴ G02B 7/26

U.S. Cl. 350—96.20 **2 Claims**

1. A fiber optic connector system for transmitting input and

output signals to and from an integrated circuit module which comprises:

a connector housing;

a plurality of optical terminators mounted in said housing, each terminator containing either an input signal or an output signal fiber optic strand;

a plurality of conical holes in said housing and in alignment with said terminators;

a substrate having an integrated circuit chip thereon;

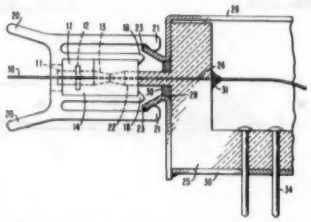
a plurality of light emitting diodes on said chip;

a wall member integrally connected to said substrate and approximately perpendicularly disposed with respect to said substrate;

an alignment plate positioned over said chip and having holes in alignment with said diodes;

a cap attached to the wall member and to the substrate, said cap having an opening;

a plurality of cones integrally attached to said wall member



and partially extending through said opening in said cap, each cone having a fiber optic strand which is connected through said alignment plate to an associated one of said light emitting diodes; and

latching means for latching the connector housing to the cap, said cones being seated in the conical holes in the connector housing thereby positioning the strands in the terminators in alignment with the strands in the cones, said latching means comprising,

retention ledges formed on said cap opening and being angularly oriented with respect to said cap opening, and

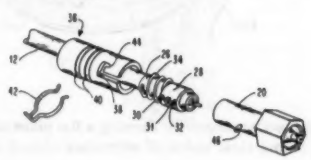
a retention housing encompassing said connector housing including latching arms operable to snap into and out of engagement with the angularly oriented retention ledges, the angular orientation of the retention ledges functioning to press the strands in the terminators snugly against the strands in the cones when the latching arms are snapped into engagement with the angularly oriented retention ledges.

4,553,814

DETACHABLE FIBER OPTIC CONNECTOR ASSEMBLY

Andrew L. Bahl; George R. Stilwell, Jr; Edward C. Uberbacher, all of Raleigh, and Charles A. Williamson, Apex, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 14, 1983, Ser. No. 531,886
Int. Cl.[4] G02B 7/26
U.S. Cl. 350—96.21 **12 Claims**



1. A connector assembly for an optical fiber cable of the type including a protective jacket characterized by:

a cable terminator permanently secured at one end of the cable and further including

a generally cylindrical housing slidable along the protective jacket, and

a collar immovably secured to the protective jacket for retaining the generally cylindrical housing, an exposed end of said fiber extending beyond the collar; and

a connector unit including

a housing, and

an optical medium permanently retained within said housing, said medium having an exposed face at one end and guide means at the opposite end for guiding the exposed end of said fiber into optical communication with said medium,

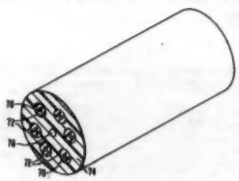
said housings in both said cable terminator and said connector unit having complementary fastening means for releasably securing said connector unit to said cable terminator.

4,553,815

OPTICAL FIBER CABLE CONSTRUCTION

Frank E. Martin, Chester, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 4, 1983, Ser. No. 464,433
Int. Cl.[4] G02B 5/13
U.S. Cl. 350—96.23 **7 Claims**



1. An improved optical fiber cable construction, comprising:

(A) an optical fiber for conduction of light energy signals;

(B) a coating of elastomeric material around the surface of said optical fiber;

(C) a liquid-crystal polymer protective cladding around the surface of said elastomeric material; and

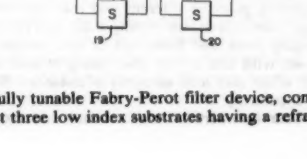
(D) said liquid-crystal polymer being of the type which is thermoplastic and which forms rigid, rod-like molecular aggregates in an overlapping, orientable fashion, at a point in its melt cycle.

4,553,816

TUNABLE FABRY-PEROT FILTER

William W. Durand, Edina; Anil K. Jain, New Brighton, and Ronald E. Peterson, Shoreview, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 216,420, Dec. 15, 1980, abandoned. This application Feb. 17, 1983, Ser. No. 467,619
Int. Cl.[4] G02B 5/28
U.S. Cl. 350—166 **10 Claims**



1. A fully tunable Fabry-Perot filter device, comprising:

at least three low index substrates having a refractive index

of less than 2.4 and mounted in parallel relationship so as to present two pairs of facing sides to each other in an optical path:

a high index, non-metallic coating having a refractive index of at least 4.0 and an optical thickness less than one half of the minimum wavelength to be transmitted, said high index coating being on said facing sides of each of said low index substrates with the thickness of the coating on at least one of the pairs of facing sides being less than the thickness of the coating on the other of the pairs of facing sides; and

spacer means for mounting said low index substrates and for adjusting the distance between either pair of said facing sides.

4,553,817

AUTOMATIC AND MANUAL FOCUSING EXCHANGEABLE LENS ASSEMBLY

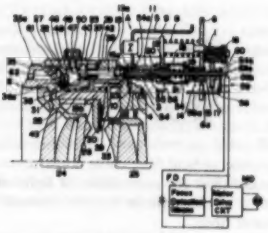
Makoto Ando, 21-308, 3-Ban, 2-Cho, Chayama-Dai, Sakai-Shi, Osaka-Fu; Tsuneyo Metabi, 12-306, 29-Ban, 1-Cho, Harumi-Dai, Sakai-Shi, Osaka-Fu; Yukio Miki, 560-4, Horiage-Cho, Sakai-Shi, Osaka-Fu, and Takeshi Egawa, 1789-107, Zinenda, Hannan-Cho, Sennan-Gun, Osaka-Fu, all of Japan

Filed Apr. 4, 1983, Ser. No. 481,933

Claims priority, application Japan, Apr. 8, 1982, 57-59278; May 27, 1982, 57-78823[U]

Int. Cl.⁴ G02B *7/10*; G03B *13/22, 3/00*

U.S. Cl. 350—255 **14 Claims**



1. A lens assembly detachably mountable on an optical apparatus which includes an automatic focusing device whose output driving shaft has a front end located in or adjacent to a mount surface at the front of said optical apparatus, said lens assembly comprising:

a stationary barrel integrally provided with a mount surface contacting said mount surface at the front of said optical apparatus when said lens assembly is mounted on said optical apparatus;

an optical system adjustable for focusing;

a single focus adjusting mechanism for adjusting said optical system for focusing;

a manual focusing ring manually operable for rotation relative to said stationary barrel about the optical axis of said optical system for operating said focus adjusting mechanism;

a driven mechanism driven by said output driving shaft for operating said focus adjusting mechanism, said driven mechanism including a driven shaft having a rear end located in or adjacent to said mount surface of said lens assembly and shiftable relative to said stationary barrel in the direction parallel to the optical axis of said optical system between an engaging position wherein said rear end engages said front end of said output driving shaft and a disengaging position wherein said rear end disengages from said front end of said driving shaft, said rear end also disengaging from said front end of said output driving shaft even with said driven shaft being at said engaging position when said lens assembly is detached from said optical apparatus;

a change-over member provided on said stationary barrel separately from said manual focusing ring and manually operable between a manual focusing position and an automatic focusing position; and

means, interlocking said change-over member with said driven shaft, for shifting said driven shaft to said engaging position in response to the manual operation of said change-over member to said automatic focusing position and to said disengaging position in response to the manual operation of said change-over member to said manual focusing position.

4,553,818

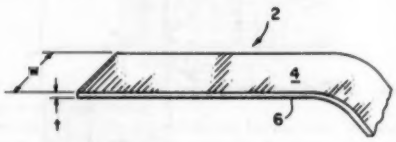
DIRECTIONAL FILTER FOR FILTERING AMBIENT LIGHT

Richard L. Cohen, Matawan, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 12, 1983, Ser. No. 560,689

Int. Cl.⁴ G02B *5/20*

U.S. Cl. 350—276 R **11 Claims**



1. A directional filter for filtering ambient light, characterized by:

first and second sections of a roll formed by winding a thin base strip into a plurality of convolutions, with each of the convolutions having an opaque surface:

the first and second sections being cut from the face of the roll, with said first and second sections being disposed relative to each other so that their respective convolutions are in an orthogonal relationship;

said convolutions in an orthogonal relationship cooperating to form light directing channels which are bounded by opaque surfaces: and

said light directing channels imparting directional characteristics to light entering the filter from outside a predetermined angle and for thereby filtering said light

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4,553,819

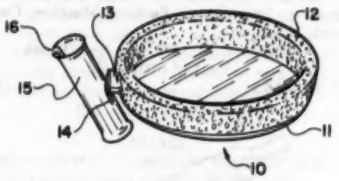
VISUAL AID APPARATUS FOR VIEWING OBJECTS BENEATH WATER SURFACE

Charles Correll, 161 Haigler Rd., Lenoir, N.C. 28645

Filed Jun. 27, 1984, Ser. No. 625,442

Int. Cl.⁴ G02B *5/00*

U.S. Cl. 350—319 **4 Claims**



1. A visual aid apparatus for forming a flat plane on a water surface to permit clear vision of subsurface objects and comprising:

(a) a relatively thin transparent sheet of material;

(b) a buoyant, closed wall member secured in a leakproof

manner to said sheet to define a relatively shallow pan-like container for floating on the water surface, said wall preventing water from entering said container, and said transparent sheet permitting viewing of subsurface objects; and,

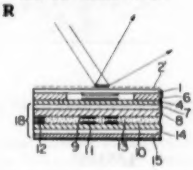
(c) holding means carried by said container for holding an elongate member by which the container is maneuvered along the surface of the water as desired, said holding means comprising a tube pivotally mounted to the outer periphery of said container for holding a vacuum or suction pipe of the kind used to clean a swimming pool.

4,553,820

KEYBOARD SWITCH WITH A MESH OF FIBERS

Yuji Harada, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 1983, Ser. No. 517,631
Claims priority, application Japan, Aug. 13, 1982, 57-140672
Int. Cl.⁴ G02F 1/133
U.S. Cl. 350—331 R **7 Claims**



1. A display keyboard comprising:

means for displaying information to be entered; and

a keyboard provided on said display means and including:

a first transparent sheet having at least first and second opposite surfaces;

a coarse mesh layer comprising filaments provided on said first surface of said first transparent sheet, said coarse mesh layer being disposed to be contacted by an operator's finger;

a second transparent sheet provided parallel to and spaced a predetermined distance apart from said second surface of said first transparent sheet; and

a pair of transparent electrodes respectively provided on said first and second transparent sheets so as to be opposed to each other;

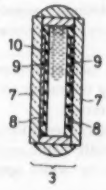
wherein the display information is visible through said first and second transparent sheets and said pair of transparent electrodes.

4,553,821

LIQUID CRYSTAL DISPLAY DEVICES

Yutaka Ishii, Nara; Fumiaki Funada, Yamatokoriyama; Toshiaki Takamatsu, Tenri, and Wada Tomio, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 10, 1985, Ser. No. 233,289
Claims priority, application Japan, Feb. 29, 1980, 55-25914
Int. Cl.⁴ G02F 1/135
U.S. Cl. 350—339 R **14 Claims**



1. A matrix liquid crystal display device for video image using depolarization in twisted-nematic mode comprising a pair of transparent substrates defining a pair of mutually facing surfaces, transparent electrodes provided on each of said mutually facing surfaces, an insulating layer with orienting property formed on said electrodeds on each of said surfaces, a liquid crystal layer formed by depolarization in a twisted-nematic layer, said liquid crystal being nematic with a negative dielectric anisotropy, and disposed between said mutually facing insulating layers, and a polarizer provided on the opposite surface of each of said substrates from said liquid crystal layer, and the liquid crystal layer contains an ionic dopant such that the cut-off frequency f_c (Hz) of said liquid crystal layer satisfies the following relationship within a range of ambient temperatures:

$$16 \cdot C/C_o \cdot N \cdot F \geq f_c \geq 8 \cdot N \cdot F$$

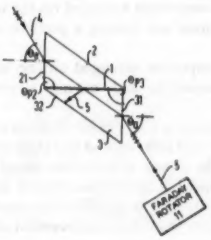
in which N stands for the number of multiplex driving, F stands for the frame frequency of an image signal, C stands for the capacitance per unit area of said insulating layers, and C_o stands for the capacitance per unit area of said insulating layers when they have a specific dielectric constant of about 4, and a thickness of about 100 Å, where the f_c value of the device is at least about 29 KHz and such that the reproduction of a video image with a half-tone is achieved, said insulating layers are treated with an alkoxysilane coupling agent containing a glycidoxy group.

4,553,822

OPTICAL POLARIZER HAVING A DIELECTRIC MULTIPLE LAYER SYSTEM

Hans Mahlein, Unterhaching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 22, 1982, Ser. No. 400,955
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1981, 3137442
Int. Cl.⁴ G02F 1/09; G02B 5/30
U.S. Cl. 350—377 **11 Claims**



1. In an optical polarizer comprising a dielectric multiple layer system being composed of a plurality of layers having a low index of refraction alternately arranged with layers having a high index of refraction, said dielectric multiply layer system being disposed between a pair of transparent bodies with one of said pair of transparent bodies having a radiation entrance surface engaged with a medium of relatively lower index of refraction for receiving incident linearly polarized radiation from a source and the other of said pair of bodies having a radiation exit surface engaged with a medium with a relatively low index of refraction for emitting linearly polarized radiation of a first direction from the polarizer to a Faraday rotator, said Faraday rotator returning radiation back to the exit surface with a second direction of polarization perpendicular to the first direction, wherein the index of refraction of the transparent bodies, the high index of refraction layers and the lower index of refraction layers are selected in such a manner that the Brewster condition is respectively met at the boundary sur-

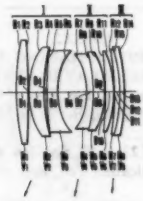
faces between the layers and also between the layer system and each transparent body and also between each transparent body and the surrounding outside medium, the improvements comprising the index of refraction n_G of each of the transparent bodies adjacent to the multiple layer system being selected to be equal to the index of refraction n_L of the layers having the lower index of refraction, and both the angle of incidence of the radiation at the radiation entrance surface as well as the angle of emergence of the radiation at the radiation exit surface being selected to equal the Brewster angle which is respectively given by arc tan (n_L/n_0), wherein n_0 is the low index of refraction of the medium adjacent each of the radiation entrance and exit surfaces and said muliple layer system reflecting the light with the second direction of polarization from the Faraday rotator.

4,553,823

LARGE RELATIVE APERTURE OBJECTIVE LENS

Masatake Kato, Tokyo, and Shigeru Hashimoto, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 6, 1982, Ser. No. 375,672
Claims priority, application Japan, May 25, 1981, 56-79029
Int. Cl.⁴ G02B *9/62, 9/64*
U.S. Cl. 350—463 **2 Claims**



1. A large relative aperture objective lens including:
(a) a first component having a positive refractive power;
(b) a second component arranged on the image side of said first component and having a positive refractive power; and
(c) a third component arranged on the image side of said second component and having a positive refractive power,
whereby as focusing is effected down from infinity to shorter object distances, said first, second and third components move axially toward the object, wherein the speed of movement of said first component is faster than that of movement of said second component, and the speed of movement of said second component is faster than that of movement of said third component.

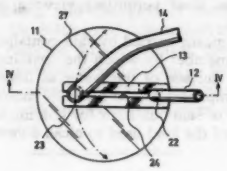
4,553,824

EYEBALL OBSERVING CONTACT LENS PROVIDED WITH ILLUMINATING MEANS

Kuniomi Abe, Kobe, Japan, assignor to Konan Camera Research Institute, Inc., Nishinomiya, Japan

Filed Apr. 27, 1984, Ser. No. 604,929
Claims priority, application Japan, May 13, 1983, 58-72054[U]
Int. Cl.⁴ A61B *3/10*
U.S. Cl. 351—219 **5 Claims**

1. An eyeball observing contact lens device comprising a lens structure having one major surface to be used as an observation surface and another major surface of concave configuration for contact with the eyeball to be observed, a support member movably carried by said lens structure and a light conductor having a light exit end carried by said support member for projecting light into said one major surface whereby said exit end of said light conductor can be moved



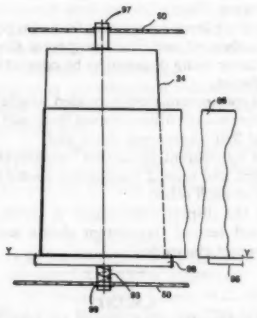
relative to said one major surface for illumination of said eyeball.

4,553,825

PHOTOCOMPOSING APPARATUS AND METHOD

Michel Moulin, Lausanne, and Jean-Claude Risse, Prangins, both of Switzerland, assignors to Autologic, S.A., Bussigny-pres-Lausanne, Switzerland

Filed Jun. 10, 1983, Ser. No. 503,228
Int. Cl.⁴ B41B *13/00*
U.S. Cl. 354—5 **27 Claims**



1. Photocomposing apparatus having means for forming character images on flexible photosensitive sheet material and including feed means for feeding said sheet material past an exposure station, said feed means including at least one rotary roll, guide means comprising a flange extending outwardly from the surface of said roll and having an abutment surface against which one edge of said sheet abuts to align said sheet, said roll being larger in diameter adjacent said abutment surface than at a distance from said abutment surface to give said roll a tapered surface.

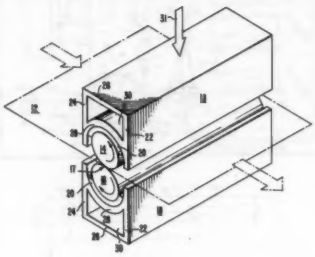
19. A photocomposing method comprising the steps of:
(a) successively forming character images in lines on a web of photosensitive material;
(b) winding the resulting composition-bearing material into a roll in an output cassette while applying tension
roll in an output cassette while applying tension to said material; and
(c) releasing the tension on said material periodically during said winding step.

4,553,826

DEVICE FOR PRESSURE FUSING IMAGES ONTO PAPER IN ELECTROSTATIC COPIERS

Michael Mosholder, Powell, Ohio, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 25, 1983, Ser. No. 516,947
Int. Cl.[4] G03G *15/20*
U.S. Cl. 355—3 FU **18 Claims**



1. A pressure fixing device for a copying machine comprising:

a first cylindrical pressure fusing roll and a second cylindrical pressure fusing roll, said pressure fusing rolls positioned to form a nip therebetween and said pressure fusing rolls each relatively rotatable about their respective longitudinal axis;

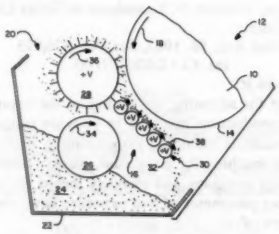
each of said pressure fusing rolls being rotatably fixed within substantially rigid bearing housing means for transmitting force to and constraining deflection of said pressure fusing rolls, and said pressure fusing rolls being rotatable solely on a bearing within said bearing housing means, said bearing and said bearing housing means extending substantially the entire longitudinal length of said pressure fusing rolls so that pressure applied to said bearing housing means is transmitted uniformly along the roll axis of said pressure fusing rolls and said pressure fusing rolls are constrained against longitudinal deflection.

4,553,827

ELECTROPHOTOGRAPHIC COPYING APPARATUS INCLUDING AN ENLARGED IMAGE DEVELOPING STATION

Edward F. Mayer, San Jose, Calif., assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 30, 1983, Ser. No. 510,073
Int. Cl.[4] G03G *15/08*
U.S. Cl. 355—3 DD **6 Claims**



1. An assembly for developing a latent electrostatic image formed on the photosensitive outer surface of a rotating developing drum making up part of an electrophotographic copying apparatus, said assembly comprising:

(a) means for housing a supply of developer including negatively charged toner particles in close proximity to an outer surface segment of said drum as the latter moves through its path of rotation;

(b) means including a primary magnetic developing roller mounted within said housing means for rotating about its own axis in confronting relationship with said outer surface segment of said drum in a way which continuously moves fresh developer within the housing means closer to and in the direction of movement of said surface segment; and

(c) an arrangement for agitating the flow of said developer by means of mechanical agitation only without using a magnetic field as the developer is moved by and away from said primary brush, said arrangement including

(i) a series of adjacent rollers smaller in cross-section than said preliminary roller, successively disposed within said housing means in the path of movement of said developer as the latter moves away from said primary roller.

(ii) means for rotating said secondary rollers whereby to impart a tumbling action to the developer intercepted thereby, and

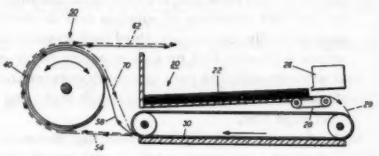
(iii) means for electrically biasing said rollers with a positive voltage.

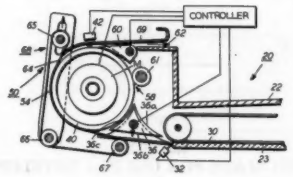
4,553,828

RECIRCULATIVE DOCUMENT INVERTER

William R. Burger, Fairport; James E. Hutton, Webster, and Morton Silverberg, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 1, 1983, Ser. No. 510,122
Int. Cl.[4] G03B *27/32*
U.S. Cl. 355—3 BE **8 Claims**





1. In a recirculating document handling apparatus for a copier, in which a set of document sheets are sequentially circulated from document stacking means to the imaging station for the copier and back to said stacking means, and in which selectable inverting means are provided for inverting or not inverting the document sheets as they are being so circulated and before they are returned to said stacking means, the improvement in said selectable inverting/non-inverting means comprising:

large diameter inverting roller means adjacent the downstream side of the imaging station extending vertically from said imaging station to above said stacking means for feeding of documents between the imaging station and said stacking means,

said inverting roller means having a surface circumference greater than the maximum length of said document sheets in the movement direction of said document sheets,

means for normally rotating said inverting roller means in a first direction of rotation, and for selectably rotating said inverting roller means in the reverse direction of rotation,

repositionable first sheet guide means for guiding, in a first guide position, a document sheet in a first path from said imaging station around the outside of said inverting roller means and then towards said stacking means with said inverting roller means driven only in said first direction,

said first path returning document sheets to said stacking means in their original orientation therein without inversion,

retaining means for retaining document sheets against the outside of said inverting roller means,

said first guide means being repositionable to a second position, in coordination with said selectable reverse rotation of said inverting roller means, in which a document sheet is guided in a second path around the inside of said inverting roller means (between said inverting roller means and the imaging station) and then to the outside of said inverting roller means with said roller means being driven in said reverse direction of rotation,

second guide means defining a third document sheet path from said inverting roller means to said stacking means,

said inverting roller means being automatically re-reversed in rotation to said first direction of rotation after the trail edge of a document sheet in said second path has passed said second guide means and before said document sheet has been completely rotated around said inverting roller,

said second path and said second guide means automatically causing the trail edge of a document sheet fed therepast in said second path to flip relative to said second guide means while said document sheet is held by said retaining means so that upon said re-reversal of said inverting roller to said first direction of rotation said document sheet is automatically fed into said third path toward said stacking means trail edge first by said inverting roller means,

and wherein said first path returns document sheets to said document restacking means through said same third path lead edge first,

said selectable inverting/non-inverting means providing a very short total document sheet path length yet providing a large minimum radii of curvature of all document sheets in all of said first, second and third document paths to minimize document sheet feeding resistance or curling.

4,553,829

METERING BLADE FOR USE IN A DEVELOPMENT SYSTEM

Jan Bares, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

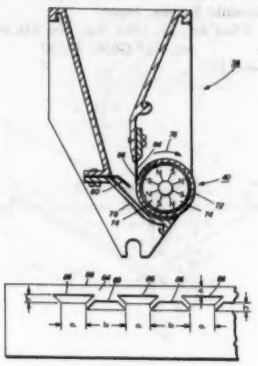
Filed Oct. 21, 1983, Ser. No. 544,298
Int. Cl.[4] G03G *15/09*
U.S. Cl. 355—3 DD **14 Claims**

1. An apparatus for developing a latent image recorded on an image receiving member, including:

a housing defining a chamber for storing a supply of marking particles therein;

means for transporting the marking particles from the chamber in said housing closely adjacent to the latent image recorded on the image receiving member; and

a blade having at least two rows of apertures therein closely adjacent to the free edge thereof with the rows of apertures forming a substantially uniform cross section thereacross, said blade being attached to said housing with the free edge thereof being in resilient contact with said transporting means so that a portion of the marking particles on said transporting means pass through the apertures in said



blade prior to being transported closely adjacent to the latent image recorded on the receiving member.

4,553,830

SERVICING SYSTEM FOR REPRODUCTION MACHINES

Tuan A. Nguyen, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 26, 1983, Ser. No. 526,925
Int. Cl.[4] G03G *21/00*
U.S. Cl. 355—14 R **6 Claims**

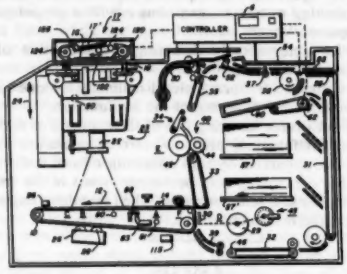
1. A method for adjusting the timing of the exposure lamp means in a reproduction machine to provide optimum copy quality, said machine including programming means for programming said machine for copy runs, display means for displaying the copy program, and memory means for storing the operating timing parameter of said exposure lamp means, comprising the steps of:

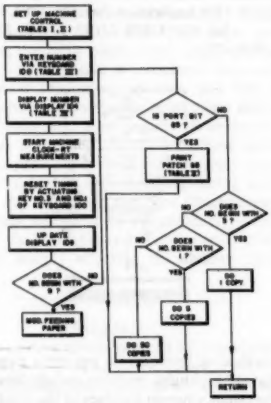
(a) using said programming means, inputting a preset machine servicing routine for accessing and displaying on said display means the current operating timing parameter for said exposure lamp means, said servicing routine automatically programming said machine to make a predetermined number of test copies;

(b) actuating said machine;

(c) viewing the test copies produced by said machine while

adjusting the operating timing parameter for said exposure lamp means; and




SET UP MACHINE CONTROL (TABLES 1, 2)
ENTER NUMBER VIA KEYBOARD 100 (TABLE 2C)
DISPLAY NUMBER VIA DISPLAY 104 (TABLE 3E)
START MACHINE CLOSE-BY MEASUREMENTS
RESET TIMING BY ACTUATING KEY NO. 3 AND NO. 0 OF KEYBOARD 100
UP DATE DISPLAY 104
DOES NO. BEGIN WITH 9 ?
WAIT FEEDING PAPER
IS PORT 0/17 ON ?
NO
YES
PRINT PATCH NO (TABLE 2E)
DOES NO. BEGIN WITH 9 ?
DOES NO. BEGIN WITH 1 ?
DO 1 COPY
DO 9 COPIES
DO 90 COPIES
RETURN

(d) repeating step c until the operating timing parameter for said exposure lamp means is adjusted so that said machine makes test copies having the desired copy quality.

4,553,831

COPIERS

Barry M. Dixon, Letchworth, England, assignor to Xerox Corporation, Stamford, Conn.

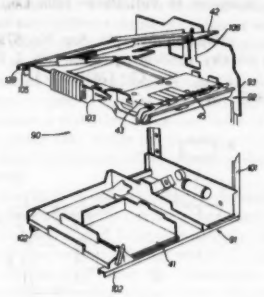
Filed Jun. 1, 1984, Ser. No. 616,337

Claims priority, application United Kingdom, Jun. 8, 1983, 8315729

Int. Cl.⁴ G03B *27/32, 27/52*

U.S. Cl. 355—26 **7 Claims**

1. A copier including a paper tray unit comprising first and second paper trays having a common sheet feeder in which said first tray is mounted for movement between a lowered, operative position in which it is seated within the second tray and operatively associated with the sheet feeder and a raised, inoperative position in which it is spaced over the second tray and the latter is operatively associated with the sheet feeder, said unit being mounted on slides for withdrawal to facilitate access such that said trays are withdrawable together when



said first tray is in its lowered position and said second tray is withdrawable alone when said first tray is in its raised position.

4,553,832

TRI-COLOR ADDITIVE COLOR PRINTING HEAD AND ENLARGER

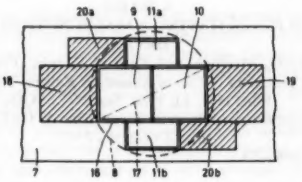
Egbertus J. P. Maassen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 2, 1984, Ser. No. 606,017

Claims priority, application Netherlands, May 9, 1983, 8301630

Int. Cl.⁴ G03B *27/32, 27/52*

U.S. Cl. 355—32 **4 Claims**



1. A device for adjusting the relative ratio of the colors red, green and blue in light used for making photographic color prints, comprising

a light source providing a convergent beam,

a filter holder disposed in said convergent beam, having an opening therethrough for transmitting light,

additive color filters, respectively transparent to red, green and blue, disposed in a plane and received in said opening, the surface areas of each of said filters being substantially equal to each other; first and second of said filters being each rectangular in shape and being arranged beside each other so as to define a rectangle having major sides whose diagonal defines a circle; and said third filter being formed by two halves disposed symmetrically on either side of the major sides of the rectangle, within said circle, and

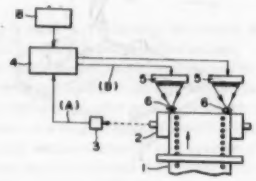
a plurality of adjustable screens for screening light passing through respective ones of the filters.

4,553,833

SIDE PRINTING APPARATUS

Takeshi Kanaoka, and Shigehisa Shimizu, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 31, 1984, Ser. No. 575,538
Claims priority, application Japan, Feb. 2, 1983, 58-12761[U]
Int. Cl.⁴ G03B *27/52*
U.S. Cl. 355—40 **6 Claims**



1. A side printing apparatus for applying characters, symbols and the like as latent images to the marginal portions of a moving photographic film, said apparatus comprising:

light emitting means for producing a dot pattern with light spots comprising a plurality of light emitting elements arranged in a linear array perpendicular to the direction of the advancement of film, said linear array being positioned above a marginal portion of the film and being longer than the width of said marginal portion;

position detecting means for detecting the advanced length of said film to provide position signals;

control means for selectively driving said light emitting members to emit light in accordance with said position signals; and

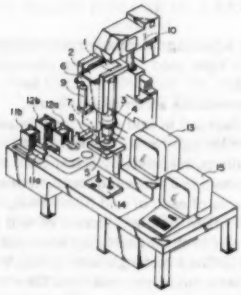
converging means for converging light rays from said light emitting members onto said marginal portion, said converging means comprising one circular converging lens means associated with said linear array of light emitting elements, said circular lens means being common to all said light emitting elements of said linear array.

4,553,834

MASK ALIGNER HAVING A MALFUNCTION DISPOSAL DEVICE

Naoki Ayata, Machida, and Tadashi Konuki, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1983, Ser. No. 554,633
Claims priority, application Japan, Dec. 1, 1982, 57-210986
Int. Cl.⁴ G03B *27/42*
U.S. Cl. 355—53 **17 Claims**



1. An exposure apparatus for exposing a radiation-sensitive member to a pattern of an original, comprising:

means for illuminating the original in order to expose the radiation-sensitive member;

means for operating said exposure apparatus, including said illuminating means, in accordance with a predetermined sequence;

means for automatically detecting a malfunction of said exposure apparatus;

memory means for storing plural manners, for one kind of malfunction, of disposing of the malfunction;

selector means for selecting one of the manners of disposing of the malfunction, prior to start of operation of said exposure apparatus by said operating means; and

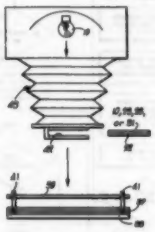
means for controlling said operating means in the manner selected by said selector means when said detecting means detects the malfunction.

4,553,835

PROCESS FOR PRODUCING PRE-PRESS COLOR PROOFS

James T. Morgan, Jr., 1914 Stark Ave., Columbus, Ga. 31906

Continuation-in-part of Ser. No. 347,893, Feb. 11, 1982, abandoned. This application Jun. 29, 1984, Ser. No. 626,134
Int. Cl.⁴ G03B *27/32, 27/72, 27/76*
U.S. Cl. 355—77 **12 Claims**



1. A method of preparing a pre-press proof of an original subject having highlight, midtone and shadow tone areas using color print paper wherein the dyes of the print paper have been brought into substantial color compliance with the yellow, cyan and magenta process inks to be used in producing a lithographic reproduction of said original subject, and the tonal range of the proof image has been extended to closely match that of the final process ink print, said method comprising the steps of:

preparing yellow, cyan and magenta color half tone separation negatives and positives of the original subject to be reproduced;

separately placing the halftone negatives in sequential order over a sheet of color print paper sensitive to green, blue and red light respectively;

exposing the print paper sheet to light passed through a blue filter when the yellow halftone separation negative is over the print paper sheet, a red filter when the cyan halftone separation negative is over the print paper sheet, and a green filter when the magenta halftone separation negative is in place thereover,

said exposure of the print paper sheet being carried out with each halftone separation negative in place over the print paper sheet for a predetermined time period sufficient to cause the dyes of the print paper sheet upon development thereof to exhibit densitometer readings wherein through a blue filter, the yellow reading of the exposed print paper relatively closely matches the yellow reading obtained by densitometer measurement through a blue filter of the yellow process ink, through a green filter the magenta reading of the exposed print paper relatively closely matches the magenta reading obtained by densitometer measurement through a green filter of the magenta process ink, and through a red filter the cyan reading of the

exposed print paper relatively closely matches the cyan reading obtained by densitometer measurement through a red filter of the cyan process ink;

during exposure of the print paper sheet to light through a red filter while the cyan halftone separation negative is over the print paper sheet, also exposing the print paper sheet to light through a green filter for a sufficient period of time to cause the dyes of the print paper sheet upon development thereof to exhibit a densitometer reading wherein the magenta reading through a green filter relatively closely matches the magenta contaminant reading obtained by densitometer measurement through a green filter of the cyan process ink,

during exposure of the print paper sheet to light through a green filter while the magenta halftone separation negative is in place over the print paper sheet, also exposing the print paper sheet to light through a blue filter for a sufficient period of time to cause the dyes of the print paper sheet upon development thereof to exhibit a densitometer reading wherein the yellow reading through a blue filter relatively closely matches the yellow contaminant reading obtained by densitometer measurement through a blue filter of the magenta process ink; and

increasing the tonal range of the color print paper proof by also placing on the print paper sheet when the magenta separation halftone negative is associated therewith, the magenta halftone separation positive, and the yellow halftone separation positive on the print paper sheet when the yellow halftone separation negative is associated with the print paper sheet, and the cyan halftone separation negative on the print paper sheet with the cyan separation halftone positive, and in each instance passing additional light through the red, green and blue filters respectively for time periods sufficient to progressively extend the tonal range of the highlight and midtone areas of the film proof without unduly affecting the shadow tone area thereof.

4,553,836

METHOD AND APPARATUS FOR ELECTROOPTICAL DISTANCE MEASUREMENT

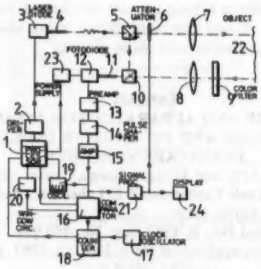
Dietrich Meier, Erlinsbach, and Hans-Ulrich Minder, Aarwangen, both of Switzerland, assignors to Kern & Co. AG., Aarau, Switzerland

Filed Aug. 30, 1982, Ser. No. 412,496

Claims priority, application Switzerland, Sep. 29, 1981, 6249/81

Int. Cl.⁴ G01C *3/08*; G01S *7/28*

U.S. Cl. 356—5 **7 Claims**



1. A method for electrooptical measurement of the distance between an object (22) and a reference point (5,10), whereby impulses of light are transmitted from a transmitter (3) to the object (22) and back to a photoelectric receiver (12) near to the transmitter (3) and whereby pairs of electrical signal impulses (45, 49) corresponding to the instants of transmission and of reception of the light impulses are generated by means of said photoelectric receiver (12) to obtain the time of travel of said light impulses for computing said distance, comprising the steps

(a) generating signals (46) which last between the occurrence of at least two different threshold values at mutually corresponding edges of said pairs of signal impulses (45, 49),

(b) gating, by means of said gating signals (46) for each threshold value, a gate (18), said gate (18) passing the output of a frequency stabilized clock-oscillator (17) on to a frequency-counter (18), while the switching instants of the gate (18) and the impulses of the clock-oscillator (17) are uncorrelated,

(c) calculating, for each threshold value, a corresponding duration of gating signals by the weighted mean of the more frequent counts of said frequency-counter (18), and

(d) obtaining a characteristic time of travel of said light impulses for said distance from the dependence of said calculated duration of gating signals upon the threshold value.

4,553,837

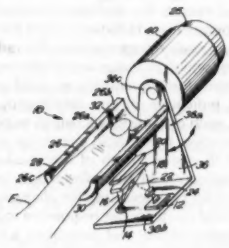
ROLL FINGERPRINT PROCESSING APPARATUS

Daniel H. Marcus, New City, N.Y., assignor to Fingermatrix, Inc., North White Plains, N.Y.

Filed Oct. 24, 1983, Ser. No. 544,956

Int. Cl.⁴ G06K *9/00, 9/20*

U.S. Cl. 356—71 **10 Claims**



1. An improved fingerprint processing apparatus capable of generating a roll fingerprint image, the apparatus of the type having a source of an interrogating light beam, the beam capable of being modulated to provide a reflected light beam having fingerprint information, optical scanning means capable of causing the interrogating light beam to scan a fingerprint object, an array of photoelectric transducers, an imaging lens positioned in the path of the reflected light to provide a fingerprint image at said array, said array being arranged in a predetermined linear form for receiving the modulated light beam and for converting the fingerprint information carried by said modulated light into a plurality of sets of information signals representing a line by line scan of the fingerprint object, and multi-element electrical scanning means to electronically scan the information signal outputs of the array and to synchronize the electric scan to incremental positions of the optical scanning means, the improvement comprising:

a stationary, cylindrical-segment platen capable of providing a fingerprint object having ridge zones and valley zones, said platen having an upper surface capable of receiving, positioning, and supporting a finger and a lower surface adapted to receive an interrogating light beam, said upper surface having first anti-reflective means for providing said upper surface with image enhancement properties, a finger when positioned on said upper platen surface capable of modulating said interrogating light beam; and

means for rotating said light source, said optical scanning means, said array, said lens means and at least one element of said electrical scanning means such that the axis of rotation

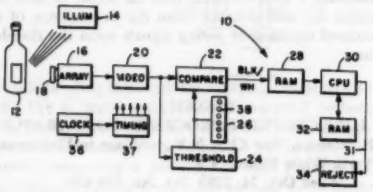
of said optical scanning means is substantially the same as the axis of the upper surface of said cylindrical-segment platen;
said optical scanning means scanning the circumference of said platen such that the angle of incidence of said interrogating light beam on the finger at the curved back surface of said platen is constant;
said electrical scan being along the axis of said cylindrical-segment platen to thus generate a roll fingerprint image.

4,553,838

OPTICAL INSPECTION SYSTEM

Kay Madsen, Saratoga, Calif., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 15, 1982, Ser. No. 368,547
Int. Cl.[4] G01N *21/88, 21/90*
U.S. Cl. 356—237 **24 Claims**



1. An optical system for deriving information from an inspected item comprising a radiation source for illuminating the inspected item, a reader responsive to the radiation from said radiation source which is indicative of information sensed on the inspected item for sequentially establishing a plurality of analog signals indicative of the information sensed on the inspected item, each of said signals beings responsive to changing ambient radiation, a threshold circuit for setting a dynamic threshold used to convert each of said analog signals into a binary signal indicative of the information sensed on the inspected item and for compensating for changing ambient radiation, said threshold circuit being responsive to the highest peak in one of said analog signals and generating a high signal indicative thereof and being responsive to the lowest peak in said one analog signal and generating a low signal indicative thereof, said threshold circuit including threshold setting means responsive to said high signal and said low signal for setting a threshold between said highest peak and said lowest peak which dynamically compensates for changing ambient radiation, comparator means for comparing each of said analog signals with said set threshold and converting each of said analog signals to a binary signal indicative of the information sensed on the inspected item which has a high condition when the analog signal exceeds said set threshold and a low condition when said analog signal is less than said set threshold, and indicator means responsive to said high signal and said low signal for generating a visual indication of the difference between said high and low signals and the magnitude of said high and low signals.

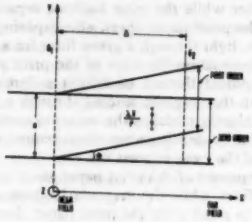
4,553,839

FREQUENCY MARKING SYSTEMS

Oded Kafri, 3 Ehud St., Beer-Sheva 84 234; Ziv Karny, 20 Zeelah St., and Dan Meyerstein, 12 Arava St., both of Omer, all of Israel

Filed Feb. 3, 1983, Ser. No. 463,615
Claims priority, application Israel, Jun. 24, 1982, 66126
Int. Cl.[4] G01J *3/00*
U.S. Cl. 356—300 **6 Claims**

1. A frequency marker system for indicating the wavelength of light rays, said system comprising:
means for collimating said light rays,
first and second light transmitting grating means aligned with at least a portion of said collimated light rays and separated by a distance Δ for providing Moire patterns, and
means for determining the changes in wavelengths of the



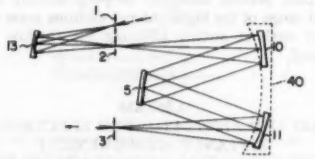
collimated light rays by determining shifts of the Moire patterns including light detecting means for determining changes in light amplitude downstream of said second light transmitting grating means.

4,553,840

DOUBLE MONOCHROMETER

Taro Nogami, Katsuta, and Masamichi Tsukada, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 16, 1982, Ser. No. 442,113
Claims priority, application Japan, Nov. 20, 1981, 56-185307
Int. Cl.[4] G01J *3/18*
U.S. Cl. 356—333 **15 Claims**



1. A double monochrometer comprising:
a main monochrometer including an entrance slit, a plane grating and an exit slit; and
an auxiliary monochrometer including a concave grating disposed on one of that portion of an entrance optical axis of said main monochrometer in front of the entrance slit thereof and that portion of an exit optical axis of said main monochrometer behind the exit slit thereof, the degree of dispersion of said concave grating being selected to be smaller than that of said plane grating.

4,553,841

METHOD OF AND APPARATUS FOR MEASURING THICKNESS AND REFRACTIVE INDEX OF TRANSPARENT BODIES

Gianni Coppa, Asti, and Giorgio Grego, Turin, both of Italy, assignors to Cselt Centro Studi E Laboratori Telecomunicazioni, S.p.A., Turin, Italy

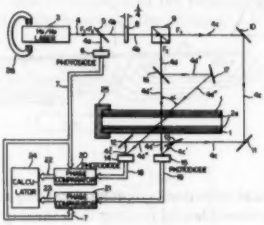
Filed Feb. 8, 1983, Ser. No. 465,031
Claims priority, application Italy, Feb. 10, 1982, 67149 A/82
Int. Cl.[4] G01B *9/02*
U.S. Cl. 356—349 **18 Claims**

1. A method of measuring the thickness and the refractive index of a test object with substantially parallel major surfaces transparent to luminous radiation, comprising the steps of:
(a) generating a first and a second monochromatic beam of luminous radiations of constant frequencies differing slightly from each other;
(b) photoelectrically deriving from said first and second

beams an electrical reference wave of a beat frequency corresponding to the difference between the beam frequencies:

(c) transluminating the test object with rays of said second beam at a first angle of incidence;

(d) photoelectrically mixing rays of said second beam, passed by the test object in step (c), with rays of said first beam, traveling over a different path, to derive therefrom a first electrical measuring wave of the same beat frequency as said reference wave but differing in phase therefrom to an extent dependent on the thickness and the refractive index of the test object;



(e) determining the phase difference between said reference wave and said first measuring wave;

(f) repeating steps (c) and (d) with a second angle of incidence, differing from said first angle, to derive two rays of said first and second beams a second electrical measuring wave of the same frequency as said reference wave and differing in phase therefrom;

(g) determining the phase difference between said reference wave and said second measuring wave; and

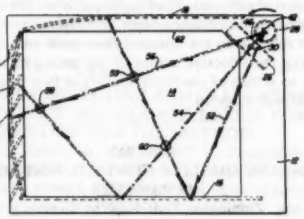
(h) calculating the thickness and the refractive index of the test object from the values obtained in steps (e) and (g).

4,553,842

TWO DIMENSIONAL OPTICAL POSITION INDICATING APPARATUS

James L. Griffin, Carpentersville, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed May 9, 1983, Ser. No. 492,859
Int. Cl.⁴ G01B *11/00, 11/03*
U.S. Cl. 356—375 **14 Claims**



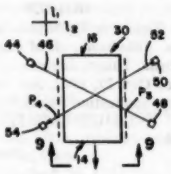
11. An optical position indicating apparatus comprising a light source; detector means for detecting presence of light and producing an electrical output in response thereto; a plurality of reflective means for distributing light emitted from said light source across a target zone, said target zone being at least partially bordered by said reflective means; and a light directing means for directing light from said light source across said target zone and for directing return light received from said target zone to said detector means; said target zone being substantially rectangular; and said light source, said detector means and said light directing means being positioned at a first corner of said target zone and said plurality of reflecting means comprising a first reflector assembly adjacent a second corner of said target zone, said second corner being positioned opposite said first corner; a second reflector assembly defining a second side of said target zone adjacent said second corner, and a third reflector assembly defining a third side of said target zone opposite said first reflector assembly; said second reflector assembly and said third reflector assembly being comprised of retroreflective material.

4,553,843

APPARATUS FOR DETERMINING THE ALIGNMENT OF LEADS ON A BODY

Dennis C. Langley, Palo Alto, and Thomas T. Brekka, Soquel, both of Calif., assignors to Micro Component Technology, Inc., St. Paul, Minn.

Continuation of Ser. No. 289,921, Aug. 3, 1981, abandoned. This application Mar. 26, 1984, Ser. No. 592,759
Int. Cl.⁴ G01B *11/04, 11/14*
U.S. Cl. 356—375 **24 Claims**



1. Apparatus for determining the alignment of at least one lead extending from a body having an axis, the lead being subject to bending along a first line parallel to the axis or being subject to bending along a second line perpendicular to the first line or being subject to a combined bending having a component along the first line and a component along the second line, comprising:

(a) first means for producing a first light beam being adapted to traverse a first path along the second line and to intersect the lead;

(b) first means for sensing the first light beam;

(c) second means for producing a second light beam being adapted to traverse a second path at an angle to the first line and the second line and to intersect the lead; and

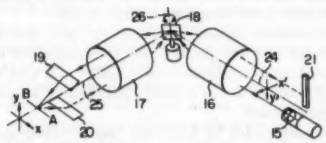
(d) second means for sensing the second light beam.

4,553,844

CONFIGURATION DETECTING METHOD AND SYSTEM

Yasuo Nakagawa, Chigasaki; Yoshitada Oshida, Fujisawa, and Kanji Ishige, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 5, 1982, Ser. No. 432,799
Claims priority, application Japan, Oct. 6, 1981, 56-158044
Int. Cl.⁴ G01B *11/24*
U.S. Cl. 356—376 **11 Claims**



1. A configuration detecting method comprising the steps of passing a laser beam from a laser beam source into a first Fourier transformation lens, reflecting said transformed laser beam by a light deflector, passing said reflected light beam into a second Fourier transformation lens for Fourier inverse trans-

formation, reflecting said inversely-transformed laser beam by a first reflecting mirror to form a laser beam spot on an object to be checked, passing said spot beam into said second lens in the form of a light beam by means of a second reflecting mirror, and passing said spot beam from said second lens into said first lens in the form of a light beam by means of said deflector to form a real image of the laser spot on a photoelectric converter.

4,553,845

DEVICE FOR AND METHOD OF ALIGNING TWO BODIES

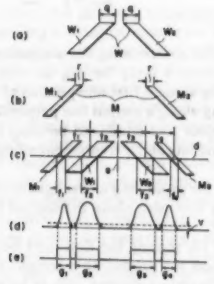
Yoichi Kuroki; Yukihiro Yoshinari, both of Kawasaki, and Ryozo Hiraga, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1982, Ser. No. 435,960

Claims priority, application Japan, Oct. 28, 1981, 56-172457

Int. Cl.⁴ G01B *11/00*

U.S. Cl. 356—400 **12 Claims**



1. A device for aligning two bodies, comprising:

holding means for holding a first body, said first body having thereon a first mark comprising at least one mark element;

moving means for holding a second body and moving said second body relative to said first body in a plane, said second body having thereon a second mark comprising at least one mark element;

mark detecting means for detecting said first mark on said first body and said second mark on said second body and putting out a detection signal steam comprising first and second mark signals respectively, representing at least one mark element comprising said first and at least one mark element comprising said second mark;

discrimination means for receiving said detection signal stream and for putting out discrimination information based on discrimination of whether said first and second mark signals are in a desired distribution in said detection signal stream;

processing means for receiving said detection signal stream and for putting out spacing information representing the spacing between at least one mark element comprising said first mark and at least one mark element comprising said second mark; and

drive means for driving said moving means in accordance with said discrimination information and said spacing information.

4,553,846

OPTICAL DETECTION SYSTEM FOR FEATURES ON A SHEET OR WEB

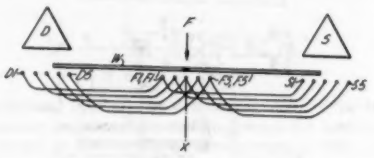
Graham H. Hilton, Hants, and Barry J. Curl, Southampton, both of England, assignors to De La Rue Systems Limited, London, England

Filed Jun. 1, 1983, Ser. No. 500,241

Claims priority, application United Kingdom, Jun. 1, 1982, 8215978

Int. Cl.⁴ G01N *21/86*; G02B *5/14*

U.S. Cl. 356—429 **5 Claims**



1. An optical detection system for detecting a feature located at a predetermined lateral position on a sheet or web fed along a flow path, comprising:

a first row of spaced light receivers extending transverse tothe direction of feed and positioned so that the row crosses the path of the feature which is required to be sensed, whereby light from the said feature will be received by one of the first row of receivers, depending on the lateral position of the sheet or web relative to the nominal flow path;

output means adapted to provide an output signal in accordance with light received by any of the receivers of the said first row;

and gating means co-operating with the sheet or web according to its lateral position relative tothe flow line for selectively blocking the response of the output means to all but one of the receivers of said first row, said gating means including means providing, at each margin of the nominal flow path, a number of light paths which in the absence of the sheet or web pass through the plane of the flow path, the number of light paths at each margin being equal to the number of light receivers in the said first row and the spacing of the light paths being equal to the spacing of the light receivers of the first row, the sheet or web when present selectively blocking some light paths at one of the margins and other light paths at the other of the margins in accordance with the lateral position of the sheet relative to the nominal flow path and thereby controlling the selective action of the gating means to determine to which of the receivers of the first row the output means will respond.

4,553,847

PACKAGING QUALITY CONTROL METHOD AND APPARATUS

Günter Lang, Zainingen, Fed. Rep. of Germany, assignor to Maschinenfabrik Alfred Schmermund GmbH & Co., Gevelsberg, Fed. Rep. of Germany

Filed Nov. 24, 1982, Ser. No. 444,079

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1981, 3146506

Int. Cl.⁴ G01N *21/55*

U.S. Cl. 356—445 **29 Claims**

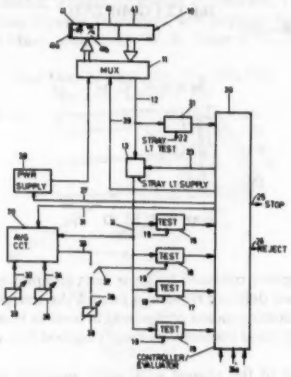
1. In a process for testing the quality of a product by directing light produced by a light source to the product and measuring the reflectivity of the product, a first threshold value of reflectivity being compared with a signal commensurate with the actual measured reflectivity and the product being rejected if the actual reflectivity signal falls below the first threshold value, the improvement comprising the steps of:

positioning the product to be tested upon a light transmissive plate;

measuring the stray light passing through the light transmissive plate and being received by a reflected light sensor with the source of the light which is to be directed to the product in the unenergized state;

measuring the light passing through the light transmissive plate and being received by the reflected light sensor with the light source in the energized, light emitting condition and the light emitted thereby being directed through the light transmissive plate to illuminate the product;

subtracting the value of the measured stray light from the value of the light reflected from the product to obtain a measurement of the quality of the product;



comparing the measurement of quality with the first threshold value to determine if the product is acceptable;

measuring the background reflection from the light transmissive plate with the light source in the light emitting energized condition and no test product positioned on the plate;

establishing third and fourth threshold values respectively commensurate with insufficient and excessive background reflection; and

comparing the measured background reflection with the third and fourth threshold values and terminating the testing process if the measured background reflection does not fall between the third and fourth threshold values.

4,553,848

METHOD OF DETECTING AND EVALUATING PHOTOMETRIC SIGNALS AND DEVICE FOR CARRYING OUT THE METHOD

Bernd Rösicke, Mannheim, and Rudolf V. Rosenbladt, Bad Homburg, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Aug. 31, 1982, Ser. No. 413,291

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138879

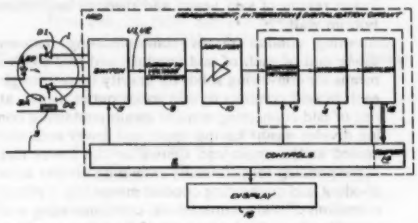
Int. Cl.[4] **G01J** *1/00;* **G01D** *1/00;* **G01N** *21/00, 33/50*

U.S. Cl. 356—448 **13 Claims**

1. In a method for detecting and evaluating the optical properties of a specimen including producing alternating light and dark phases from a light source, detecting light from the light source by way of an analog specimen to produce a signal, integrating and digitalizing the signal from the detector during the light phase and during the dark phase and subtracting the integral obtained during the dark phase from that obtained during the light phase, the improvement wherein the steps of integrating and digitalizing comprise:

forming a first total integral in a first state including a whole number of measurement voltage periods each including one light and one dark phase

comprising the steps in each period of integrating the detected signal during a part of the light phase with a single



integrator and integrating the detected signal with the reversed polarity with the same single integrator during a part of the dark phase equal in length to the part of the light phase and digitalizing the total integral with the same single integrator.

4,553,849

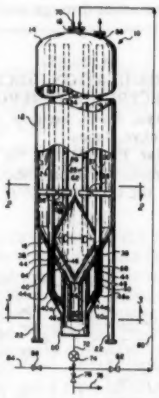
METHOD FOR BLENDING SOLIDS OR THE LIKE

Robert R. Goins, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 526,845, Aug. 26, 1983, Pat. No. 4,518,260. This application Sep. 17, 1984, Ser. No. 651,148

Int. Cl.[4] **B01F** *5/24, 15/02*

U.S. Cl. 366—134 **6 Claims**



1. A method of blending solids in solids blending apparatus of the type which includes:

a vessel having a solids inlet in an upper region thereof and solids outlet means in a lower region thereof, the lower region being defined by a downwardly converging generally frustoconically shaped bottom wall;

a plurality of conduits each having upper and lower ends and positioned within said vessel so as to extend in a generally vertical direction downwardly from said upper region of said vessel through said lower region of said vessel and through said bottom wall to said lower end, at least one of said conduits containing at least one longitudinally extending divider means having upper and lower ends for dividing said conduit into a plurality of longitudinally extending compartments, at least a portion of said compartments having at least one opening therein in said upper region of said vessel to permit solids in said upper

region of said vessel to enter the conduit and flow by gravity downwardly through said compartments, and each of said compartments, and each of said compartments of at least one of said conduits extending downwardly from said upper region of said vessel through said lower region of said vessel and through and below said bottom wall;

connecting conduit means communicating between the lower end of each of said conduits and said solids outlet means for conveying solids by gravity therethrough from each of said conduits to said solids outlet means, at least one of said connecting conduit means containing connecting divider means having upper and lower ends and connected at the upper end thereof to the lower end of a corresponding longitudinally extending divider means for dividing said connecting conduit means into a plurality of extensions of said compartments communicating with and extending from the lower ends of the corresponding compartments at least a substantial distance toward said solids outlet means to permit solids flowing downwardly through said compartments to continue to flow by gravity downwardly through said extensions of said compartments and said first connecting conduit means into said solids outlet means; and

first drain conduit means communicating between a corresponding first one of said compartments and a corresponding first opening in said bottom wall intermediate said upper region and said solids outlet means for conveying solids by gravity therethrough from a location in said lower region to said corresponding first one of said compartments, which method comprises:

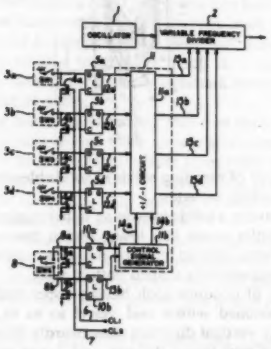
introducing solids to be blended into said vessel through said solids inlet, conveying solids by gravity through said first drain conduit from a location in the lower region to the corresponding first one of the compartments and withdrawing blended solids through said solids outlet means.

4,553,850

LOGICAL REGULATION CIRCUIT FOR AN ELECTRONIC TIMEPIECE

Yosuke Kanno, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Mar. 15, 1983, Ser. No. 475,447
Claims priority, application Japan, Mar. 16, 1982, 57-41161
Int. Cl.⁴ G04B *17/12*
U.S. Cl. 368—201 **15 Claims**



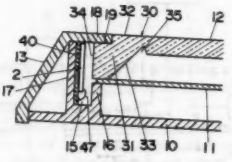
1. In an electronic timepiece having an oscillator for generating a time base signal and a variable frequency divider for dividing the frequency of the time base signal to produce a unit time signal: a logical regulation circuit comprising a first switch group comprised of plural switch members having ON and OFF states; first memory circuits for memorizing the ON-OFF information of the first switch group; a second switch group comprised of at least one switch member having ON and OFF states; second memory circuits for memorizing the ON-OFF information of the second switch group; and a calculation circuit connected to receive the contents of the first and second memory circuits for producing output signals representative of different frequency dividing ratios and for applying the output signals to the variable frequency divider to regulate the frequency dividing ratio thereof.

4,553,851

TIMEPIECE OPERATED BY SOLAR CELLS

Akio Matsumoto, and Takao Yamada, both of Neyagawa, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Dec. 7, 1983, Ser. No. 558,870
Claims priority, application Japan, Dec. 28, 1982, 57-229483
Int. Cl.⁴ G04B *1/00*
U.S. Cl. 368—205 **9 Claims**



1. A timepiece operated by solar cells comprising:

a base plate defining thereon a face of the timepiece;

a time indicating means comprising at least an hour hand and a minute hand respectively overlying said face on the base plate;

a plurality of flat shaped solar cells mounted on the base plate for energizing said movement, said solar cells being circumferentially spaced along the periphery of said face of said timepiece with the major surfaces of each solar cell being perpendicular to and in a same radial direction of the base plate, said major surfaces of each solar cell defining respectively the light sensitive surface and the opposite surface;

an electrically driven movement provided at the center portion of the base plate for being powered by the solar cells to rotate said hour and minute hand about the center axis of the base plate;

a reflecting prism extending along the periphery of said face and mounted on the base plate for deviatedly transmitting incident light to each of the solar cells, said reflecting prism having a light entrance surface exposed to a top surface of the timepiece for receiving incident light, at least one reflection surface provided at such a relationship to said entrance surface for deviating or changing the course of the incident light, and at least one light exit surface which is parallel to and confronts closely the light sensitive surface of each solar cell and through which the incident light which enters said light entrance surface and is reflected by said reflection surface is transmitted to the major light sensitive surface of each solar cell;

a terminal means extending along the periphery of said face so as to be electrically connected to said solar cells for delivering the electric power produced in the solar cells to said movement, said terminal means having a pair of first and second terminal areas which are respectively electrically connected to the light sensitive surface and the opposite surface of each solar cell, said first terminal area being connected by lead wires to each light sensitive surface at such location that both the first terminal area and the lead wires are out of confrontation with said light exit surface of the reflecting prism and said second terminal area being mechanically coupled to said opposite surface of each solar cell; and

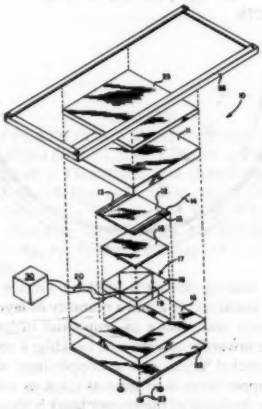
a pair of transparent conductor means provided on the base

plate to electrically interconnect said terminal means and the movement.

4,553,852
APPARATUS AND METHOD FOR HEAT FLOW MEASUREMENT

Gregory Derderian, Arlington; Robert D. Orlandi, Tewksbury; Larry S. Shu, Newton Highlands, and Bahram Siadat, Boxboro, all of Mass., assignors to W. R. Grace & Co., Lexington, Mass.

Filed Dec. 7, 1983, Ser. No. 558,750
Int. Cl.[4] G01K *17/00*
U.S. Cl. 374—1 **19 Claims**



1. An apparatus for calibrating a heat flow sensor, said apparatus comprising:

a first insulation layer;

a second insulation layer having first and second major surfaces, said first major surface being in proximate, face-to-face relation with said first insulation layer;

a heat flow meter located at an interior heat flow metering area of said second insulation layer;

a heating element positioned between said first and second insulating layers and superposed with said heat flow metering area;

a heat conductive layer having the same or larger dimensions than said heat flow metering area and superposed therewith, said layer being positioned between said heating element and said metering area;

means for monitoring the voltage output of said heat flow meter to permit measurement of heat flow across said heat flow metering area;

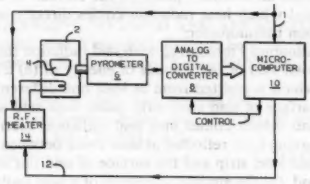
a test simulation substrate layer in proximate, face-to-face relation with said second surface of said second insulation layer and comprising an exposed test simulation surface comprising a test metering area having approximately the same dimensions as said heat flow metering area and superposed therewith; and

a heat flow sensor affixed to said exposed test simulation surface within said test metering area.

4,553,853
END POINT DETECTOR FOR A TIN LEAD EVAPORATOR

Joseph D. Gregory, Casanova, Va., and James M. Budnik, Essex Junction, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 27, 1984, Ser. No. 584,072
Int. Cl.[4] G01N *25/10*
U.S. Cl. 374—25 **5 Claims**



1. A method for detecting the end point in the evaporation of a two component alloy in a chamber, each component having a different boiling point, comprising the steps of:

optical sensing the relative temperature of a heated vessel from which the lower boiling point component and the higher boiling point component are being evaporated;

detecting a lower temperature plateau for said vessel, corresponding to the evaporation of said lower boiling point component;

detecting a first occurring increase in the temperature of said vessel following said lower temperature plateau, corresponding to the depletion of said lower boiling point component in said vessel;

detecting a higher temperature plateau for said vessel, corresponding to the evaporation of said higher boiling point component;

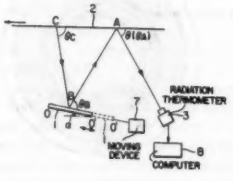
detecting a second occurring increase in the temperature of said vessel following said higher temperature plateau, corresponding to the depletion of said higher boiling point component in said vessel;

turning off a heat source to said vessel in response to said detecting said second occurring increase in temperature.

4,553,854
METHOD FOR CONTINUOUSLY MEASURING SURFACE TEMPERATURE OF HEATED STEEL STRIP

Takeo Yamada, Yokohama; Naoki Harada, Narashino, and Kiyotaka Imai, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 7, 1983, Ser. No. 558,943
Claims priority, application Japan, Dec. 17, 1982, 57-220084; Mar. 8, 1983, 58-36687
Int. Cl.[4] G01J *5/10*; G01K *13/06*
U.S. Cl. 374—129 **8 Claims**



1. A method of continuously measuring a surface temperature of a travelling heated steel strip, which comprises:

providing a flat reflecting plate at a prescribed position so as to face a travelling heated steel strip at a first inclination angle (α) relative to said steel strip, said first inclination

angle (α) and said position of said reflecting plate being selectively changeable;

directing a radiation thermometer for measuring an amount of energy of a heat radiation emitted from the surface of said steel strip toward said steel strip at a second inclination angle relative to said steel strip, said second inclination angle being selectively changeable;

continuously measuring with said radiation thermometer the amount of energy of a heat radiation which is emitted from an arbitrary point on the surface of said steep strip and which heat radiation comes directly into said radiation thermometer;

continuously measuring with said radiation thermometer the total sum of the amount of energy of (a) a heat radiation which is emitted from at least one different point on the surface of said steel strip other than said arbitrary point and which comes into said radiation thermometer after having been reflected at least twice between the surface of said steel strip and the surface of said flat reflecting plate and, (b) the amount of energy of a heat radiation which is emitted from a point on the surface of said steel strip which point is a final reflecting point of the heat radiation from said at least one different point, and which radiation comes directly into said radiation thermometer;

continuously calculating emissivity of the surface of said steel strip on the basis of said total sum thus measured of the amounts of energy of the heat radiations (a) and (b), and said amount of energy of said heat radiation emitted from said arbitrary point;

continuously measuring the surface temperature of said steel strip on the basis of said calculated emissivity of the surface of said steel strip and an amount of energy of a reference heat radiation emitted from the surface of a perfect blackbody; and

determining a final angle of reflection (θ) on the surface of said steel strip of said heat radiation emitted from said at least one different point and which has been reflected at least twice between the surface of said steel strip and the surface of said flat reflecting plate, and said prescribed angle of inclination (α) of said reflecting plate with said steel strip, at values which satisfy the following limits:

$$40° \leq \theta < 90° \quad \text{(A); and}$$

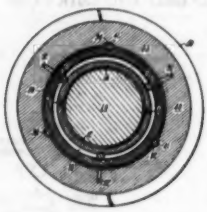
$$40° \leq \theta + 2\alpha \leq 140° \quad \text{(B).}$$

4,553,855

DAMPER AND SPRING SHAFT SUPPORT ASSEMBLY

Pranabesh De Choudhury, Greensburg, Pa., assignor to Elliott Turbomachinery Company, Inc., Jeannette, Pa.

Filed Oct. 18, 1984, Ser. No. 662,006
Int. Cl.⁴ F16C *27/02, 32/06*
U.S. Cl. 384—99 **5 Claims**



1. A support assembly for a rotating shaft which comprises:

a generally annular bearing in which the shaft is secured;

means for supplying oil between the bearing and the shaft;

an annular retainer mounted about the bearing and defining a void therebetween;

an annular single piece spring located within the void defined between the retainer and the bearing for resisting displacement of the shaft;

first spring support means including a series of axially oriented rods located between the bearing and the spring for transmitting forces therebetween;

second spring support means including a series of axially oriented rods located between the spring and the retainer for transmitting forces therebetween;

wherein said annular retainer further defines means for securing the second spring support means in the desired position; and

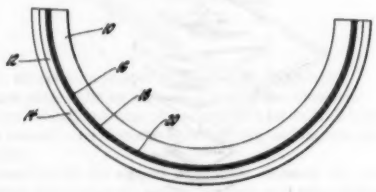
squeeze film damper means located within the void for damping motion of the shaft.

4,553,856

BEARING HAVING NICKEL-TIN-COPPER BARRIER LAYER

John C. Bierlein, Washington, and Arnold O. DeHart, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 28, 1983, Ser. No. 470,445
Int. Cl.⁴ F16C *33/28, 9/02*
U.S. Cl. 384—276 **2 Claims**



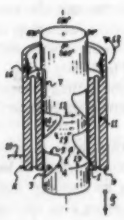
1. A journal bearing having a working surface of lead-tin alloy, a durable metal backing and a plurality of layers therebetween, said layers comprising in sequential order from the working surface inwardly towards the backing; a copper layer; a tin layer; a nickel layer and a copper-lead alloy layer, wherein said copper layer is at least as thick as said tin layer and wherein the thickness of the copper layer is about 25 to 150 microinches; the thickness of the tin layer is about 25 to 50 microinches; and the thickness of the nickel layer is about 50 to 100 microinches.

4,553,857

REVERSIBLE JOURNAL BEARING UNIFLOW LUBRICATION SYSTEM

Robert J. Ney, 2275 E. Bay Dr., Ste. 1103B, Clearwater, Fla. 33546

Filed Dec. 22, 1983, Ser. No. 564,282
Int. Cl.⁴ F16C *3/14, 9/03, 33/06*
U.S. Cl. 384—398 **2 Claims**



1. A lubricating fluid pumping and distribution system for a journal bearing wherein the axial fluid flow is the same for

either clockwise or counterclockwise direction of journal bearing rotation, said system comprising a journal encircled by a cylindrical bearing, said system containing an array of close ended, shallow, individual pumping cavities which are arranged in at least two axial columns extending along the length of the relatively rotating surfaces on either the journal or bearing surface, two side walls of the cavities form a left and right helical segment respectively such that when relative rotation between the journal and the bearing occurs the helical segments will impart a uniaxial pressure gradient on the fluid, which pressure causes the fluid to flow from a lubricant reservoir at the bottom of the bearing in an axial direction within the pumping cavity and also into a clearance formed between the journal and bearing surfaces, said adjacent columns of pumping cavities are axially offset from cavities in the first column so that they collect some of the fluid in the clearance between the journal and the bearing and impart further axial movement to the lubricating fluid, said fluid thereby traversing and lubricating the entire length of the journal.

4,553,858

BOTTOM PLATE FOR A BUSHING MOUNTED VIA ROLLING ELEMENTS ON A PIN

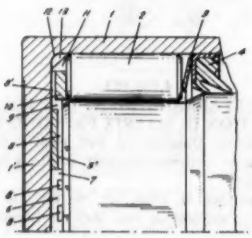
Steffen Neugebauer, Hesselbach, and Gunter Scharting, Gochsheim, both of Fed. Rep. of Germany, assignors to Fag Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany

Filed Oct. 10, 1984, Ser. No. 659,331

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1983, 3337602

Int. Cl.⁴ F16C *33/66*

U.S. Cl. 384—473 **15 Claims**



1. A bottom plate for a bushing, which bushing has an opening in it for receiving the end portion of a pin, and wherein there are rolling elements around the periphery of the pin between the pin and the interior peripheral wall of the bushing;

the bottom plate being of a width to extend close to the interior peripheral wall of the bushing;

a plurality of radially extending grooves defined in the bottom plate;

between the bottom end of the pin and the bottom of the bushing, first ones of the grooves defined in the plate run along and open toward the bottom end of the pin; between the ends of the rollers and the bottom of the bushing, second ones of the grooves in the plate run along and open toward the bottom of the bushing;

a step-like transition defined in the plate between the first and the second ones of the grooves and the transition being generally radially located in the region of the periphery of the pin.

4,553,859

Patent Not Issued For This Number

4,553,860

TEXT PROCESSING METHOD AND APPARATUS

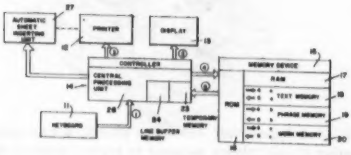
Mamoru Imaizumi, and Yasumichi Kojima, both of Nogoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Sep. 2, 1983, Ser. No. 529,696

Claims priority, application Japan, Sep. 10, 1982, 57-158285

Int. Cl.⁴ B41J *5/30*

U.S. Cl. 400—68 **13 Claims**



1. A method of printing a plurality of documents based on a text, with alterations of phrases from one document to another in at least one phrase-inserting part of the text, comprising the steps of:

storing into a phrase memory plural sets of phrase data representing plural different phrases to be inserted into the respective documents, said sets of phrase data being designated by respective phrase-indicating codes each consisting of at least one character the number of which is smaller than the number of characters constituting each of said plural different phrases;

storing into a work memory at least one set of work data comprising selected plural ones of said phrase-indicating codes in such manner as to specify the order in which said phrase-indicating codes are read out, said work data being designated by a working-group code;

storing into a text memory at least one set of text data representing a text of document, said text data including said working-group code at a position corresponding to said at least one phrase-inserting part of the text;

printing out said text data to produce a first one of said plurality of documents, while upon reading of said working-group code, reading out from said phrase memory and printing out the first set of said phrase data designated by a first one of said phrase-indicating codes of said work data, so as to insert the first phrase into said at least one phrase-inserting part of the text of the first document; and

printing out said text data to produce second and subsequent ones of said documents, while printing out second and subsequent sets of said phrase data which are designated by second and subsequent ones of said phrase-indicating codes of said work data, so as to insert the second and subsequent phrases into said at least one phrase-inserting part of the text of the second and subsequent documents.

4,553,861

CONTROL SYSTEM FOR THERMAL PRINTING TYPEWRITERS OR LIKE MACHINES

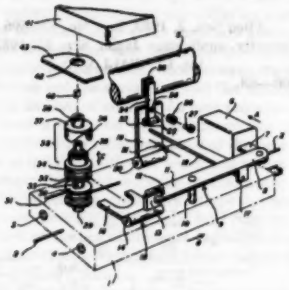
Joseph Lendl, Ottensoos, Fed. Rep. of Germany, assignor to Triumph-Adler Aktiengesellschaft fur Buro-Informationstechnik, Nurnberg, Fed. Rep. of Germany

Filed Feb. 22, 1984, Ser. No. 582,379

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1983, 3307286

Int. Cl.[4] B41J *3/20*

U.S. Cl. 400—120 5 Claims



1. In a typewriter having a platen, a carriage moveable relative to said platen incident to typing commands, and

a thermal print head supported on said carriage for movement into pressure contact with said platen,

said print head support comprising a support plate pivotally mounted on said carriage for movement toward and away from said platen,

a spring normally biasing said support plate in a direction away from said platen,

an arm pivotally mounted on the side of said support plate facing away from the platen,

said arm carrying said thermal print head, and

resilient means connected to normally bias said arm against the side of said support plate facing away from said platen whereby said arm will follow movement of said support plate toward said platen and will yield and separate from said support plate upon encounter of said print read with said platen, and

control means on said carriage responive to printing commands for moving said support plate toward said platen whereby said print head is pressed into resilient contact with said platen.

4,553,862

APPARATUS FOR THE BOUNCE-FREE LANDING OF A PRINT HEAD

Gottfried Goldrian, Boeblingen; Manfred Nitschke, Herrenberg; Volker Rudolph, Aidlingen, and Manfred Wohnsdorf, Boeblingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 12, 1984, Ser. No. 588,467

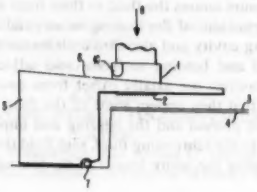
Claims priority, application European Pat. Off., Apr. 4, 1983, 83103292.5

Int. Cl.[4] B41J *3/04*

U.S. Cl. 400—121 4 Claims

1. Apparatus for controlling the landing of a printhead on a record carrier supported by a platen as the printhead moves laterally with respect to the record carrier comprising, in combination,

a landing ramp overlying a portion of said record carrier and defining a guide surface that is inclined toward said record carrier along the direction of lateral printhead movement,



said ramp being pivotally supported for movement toward and away from said record carrier,

a guide shoe connected to said printhead for engaging the guide surface during printhead landing, and

an elastically deformable element for yieldably urging said ramp in the direction away from said record carrier against the force of said printhead landing thereon.

4,553,863

METHOD AND ARRANGEMENT FOR TOLERANCE COMPENSATION IN MATRIX PRINTING DEVICES

Hermann Ullenboom, Deisenhofen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 31, 1984, Ser. No. 666,736

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1983, 3339776

Int. Cl.[4] B41J *3/12, 19/30*

U.S. Cl. 400—121 6 Claims

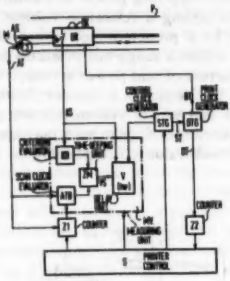
1. In a method for tolerance compensation in a matrix printing device having a printer carriage wherein a start of a print clock generation is initiated by a criterion generated at a line start, and said print clock generation is dependent upon a scan clock generated by sensing motion of the printer carriage, said printer carriage moving before a printing event, wherein the improvement comprises the steps of:

defining and measuring a time duration between a leading edge of a scan clock period of the scan clock and said criterion formed at the line start, said scan clock period being formed after a speed of the printer carriage used for printing events has been reached, and said time duration being defined and measured during a single complete line pass of said printer carriage before the actual printing event;

comparing the measured time duration to a lower and to an upper time threshold;

setting a time delay when the measured time duration is below

said lower time threshold or when it exceeds said upper time threshold; and



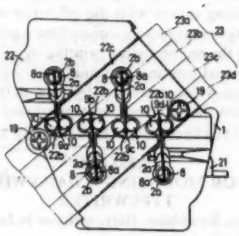
said time delay delaying evaluation of said criterion formed at the line start at least for a following actual printing event.

4,553,864

MULTICOLOR CROSS-HAMMER PRINTER

Mikio Hayashi, Tokyo, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan

Filed May 3, 1983, Ser. No. 491,051
Claims priority, application Japan, May 4, 1982, 57-74726
Int. Cl.⁴ B41J *3/10*
U.S. Cl. 400—121 **18 Claims**



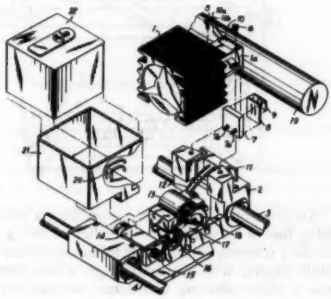
1. A multicolor cross-hammer printer comprising: a rotatable drum connected to be rotationally driven by a motor, the drum having a plurality of ridges disposed on an outer peripheral surface thereof, the ridges extending parallel to each other axially on said drum; a print head movable parallel to and axially of said drum in front thereof, said print head having a plurality of actuatable print hammers disposed to extend across selected ones of said ridges in confronting relation thereto during rotation of the drum and being spaced in parallel relation from each other in a direction of movement of said print head; an ink ribbon movable with said print head and having a portion running obliquely across said print head in front thereof, said ink ribbon having a plurality of parallel color strips extending longitudinally thereon and being impregnated respectively with inks of different color, said print hammers being disposed in confronting relation to said color strips, respectively; and actuating means for selectively actuating said print hammers to press the corresponding color strips on said ink ribbon selectively against the drum ridges to effect multicolor printing of dot matrix characters on a recording medium positioned between said drum and said print head while the latter moves in one stroke; adjacent print hammers being spaced from each other by a distance of $P_h \times (N/k)$, or a multiple thereof, wherein P_h is a horizontal pitch of a dot matrix of characters to be printed, N is the number of said drum ridges and 1/k is the speed reduction ratio between said motor and said drum.

4,553,865

INK-SUPPLIED WIRE DOT PRINTER

Yoshito Ikeda; Hitoshi Fujiwara; Yoshifumi Gomi; Masanao Matsuzawa, and Yasuhito Hirashima, all of Shiojiri, Japan, assignors to Epson Corporation, Tokyo, Japan

Filed Jun. 9, 1983, Ser. No. 502,857
Claims priority, application Japan, Jun. 10, 1982, 57-99548
Int. Cl.⁴ B41J *3/12*
U.S. Cl. 400—124 **12 Claims**



1. A wire dot printer comprising:

a plurality of wires, each wire having an end for carrying ink thereon and for impacting a print medium for printing thereon;

a plurality of ink applicator mechanisms each containing a separate ink for applying said separate ink respectively to said wire ends, said wires being divided into groups, each of said groups being positioned for receiving a separate ink from one said ink applicator mechanism respectively; and

ink heater means disposed adjacent to said wire ends for heating said ink, said ink heater means including a plurality of independent heaters, each said heater being associated respectively with one of said ink applicator mechanisms, each said heater being separately controlled so that the temperature of each said heater can be independently controlled whereby the viscosity of each separate ink can be separately controlled.

6. A wire dot printer comprising:

at least one wire having an end for carrying flowable ink thereon and for impacting a print medium for printing thereon;

an ink applicator mechanism for applying said ink to said wire end;

an ink tank disposed adjacent to said ink applicator mechanism for containing an ink having a high viscosity therein;

an ink supply member for supplying ink from said ink tank to said ink applicator mechanism, said ink supply member operating by capillary attraction; and

heater means for heating said ink supply member so that the viscosity of said ink is lowered to a state where it is sufficiently flowable to be applied to said wire end by said ink applicator mechanism.

4,553,866

ELECTRONIC TYPEWRITER

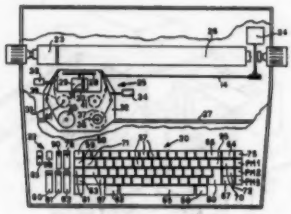
Filippo Demonte, Borgofranco, and Mario Figini, Fraz. Borgata Donna, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Continuation of Ser. No. 310,964, Oct. 13, 1981, Pat. No. 4,500,216, which is a continuation of Ser. No. 58,202, Jul. 17, 1979, abandoned. This application Aug. 14, 1984, Ser. No. 640,754

Claims priority, application Italy, Jul. 18, 1978, 68695 A/78

Int. Cl.⁴ B41J *19/58, 19/32*

U.S. Cl. 400—144.2 **2 Claims**



1. An electronic typewriter comprising a platen defining a printing line; a rotatable type member carrying a plurality of characters wherein said type member comprises a plurality of flexible fingers, wherein each finger comprises an axis and carries a corresponding character, wherein said characters have minimum, small, medium and large widths and wherein said characters are grouped according to first and second groups wherein the first group includes the characters of minimum and small widths and the second group includes the characters of medium and large widths; a hammer actuatable for selectively striking a selected character of said characters against the platen for its printing; a carriage supporting said type member and said hammer for the movement thereof along the printing line; selecting means for intermittently rotating said type member to position the axis of the finger of the selected character in front of the hammer; a spacing mechanism for spacing the carriage through steps of various length in dependence of the width of said selected character to regularly space the printed characters along the printing line; and alignment means to align an edge of the printed character with respect to a reference point of the printing line, wherein said alignment means comprise means to position the carriage on a predetermined position with respect to said reference point if the character is included on said first group and means to further move the carriage through a fixed stroke, with respect to said predetermined position if the character is included in said second group; wherein the characters of minimum and small widths and the characters of medium and large widths, respectively, have a median axis offset through opposite sides with respect to the axis of the corresponding finger in order to cause said edge to be aligned with respect to the reference point either in the case of the characters of minimum and small widths when the carriage is on said predetermined position and in the case of characters of medium and large widths when the carriage is moved through said fixed stroke with respect to the predetermined position.

4,553,867

DOT PRINTER CONTROL SYSTEM

Toshihiko Nakai, Saitama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1983, Ser. No. 560,193

Claims priority, application Japan, Dec. 20, 1982, 57-222164

Int. Cl.⁴ B41J *19/30, 19/50*

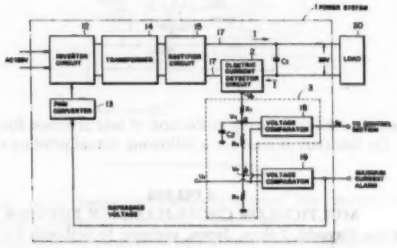
U.S. Cl. 400—323 **3 Claims**

1. A dot printer in which while a print head is reciprocated in a direction substantially perpendicular to a print sheet feed, said print head is powered to cause selectively a printing of characters and patterns on said print sheet, said dot printer comprising:

a power system for supplying power to a load;

setting means for setting a reference voltage level value corresponding to a predetermined intermediate output current value within a range not in excess of maximum rated output current of said power system;

detecting means for detecting a current flowing through output lines of said power system and for providing a voltage value corresponding to said current, said reference voltage level value corresponding to a predetermined intermediate output current value being determined so that said current flowing through output lines of said power system does not usually get to the maximum rated output current even if the current increases; and



control means for comparing the voltage value provided by said detecting means with the reference voltage value of said setting means and for controlling a printing operation to change the reciprocating printing by said print head for a bidirectional printing to a unidirectional printing when the voltage value provided by said detecting means is greater than the reference voltage of said setting means.

4,553,868

DEVICE FOR MOUNTING A DAISYWHEEL ON A TYPEWRITER

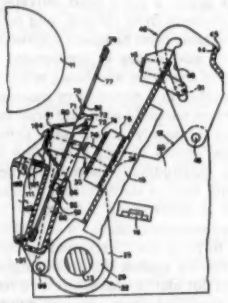
Pasquale Crosio, Strambino, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Filed Mar. 12, 1984, Ser. No. 588,724

Claims priority, application Italy, Mar. 10, 1983, 67270 A/83

Int. Cl.⁴ B41J *11/22, 1/22*

U.S. Cl. 400—356 **6 Claims**



1. A device for mounting a character carrying disc provided with a cylindrical hub portion in a printing machine having a platen, a fixed guide parallel to said platen, a carriage slidable on said guide, a frame pivotally mounted on said carriage, a selecting motor mounted on said frame and having a motor

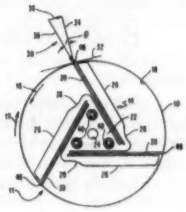
shaft for engaging said disc, a striker hammer mounted on said frame, and a mechanism connected to said carriage and to said frame for swinging said frame with respect to said carriage to move said selecting motor and said striker hammer away from said platen, said device comprising a substantially vertical pocket having two lateral sides perpendicular to said fixed guide and a wall parallel to said fixed guide, said pocket being disposed between said platen and said frame for lodging said character carrying disc, and means for allowing easy insertion of said character carrying disc in said pocket and a simultaneous coaxial coupling of said motor shaft with the introduced character carrying disc, said allowing means comprising a lower portion of said pocket which is pivotally connected to said frame near said fixed guide, a pin and slot coupling between said carriage and at least one of said lateral sides of said pocket so that the swinging of said frame with respect to said carriage causes a corresponding vertical movement of said pocket with respect to said fixed guide, and a semicylindrical recess on said wall of said pocket for carrying said cylindrical hub portion of said disc during the insertion thereof, said semicylindrical recess being substantially coaxial to said motor shaft.

4,553,869

BUCKLING ONE WAY CLUTCH

Douglas E. Alexander; James F. Holland, both of Raleigh; Herbert G. Leonard, Louisburg, and Alvin R. Reed, Raleigh, all of N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 12, 1983, Ser. No. 531,111
Int. Cl.[4] B41J *19/76*
U.S. Cl. 400—568 **11 Claims**



1. A clutch assembly comprising:

a first means with a smooth engagement surface thereon; and a second means disposed coaxially with said engagement surface and to rotate relative thereto;

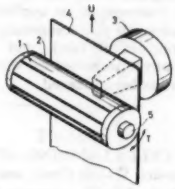
said second means including a hub section with at least a first straight and elongated flexural member extending from said hub section to frictionally engage the smooth engagement surface; and at least a second straight and elongated flexural member extending from said hub section to a zone whereat the end surface of said second straight and elongated flexural member is in spaced alignment with the engagement surface whereby the first flexural member is made to buckle in response to forces outside of a predetermined range and causes the second flexural member to be brought into contact with the engagement surface to resist said forces.

4,553,870

IMPACT TYPE COLOR PRINTER

Hideaki Takenoya, Hachioji, and Fumiyuki Mishima, Hino, both of Japan, assignors to Janome Sewing Machine Industry Co. Ltd., Japan

Filed Jun. 22, 1984, Ser. No. 623,684
Claims priority, application Japan, Jun. 22, 1983, 58-110993
Int. Cl.[4] B41J *27/06, 27/08*
U.S. Cl. 400—662 **4 Claims**



1. A color printer operated with supply of a power source to print a paper, comprising:

a cylindrical platen provided on the periphery thereof with a plurality of members each saturated with a different color ink, each ink saturated member being divided into a number of printing areas each extending in an axial direction of said member and arranged in an angular direction of said platen, said platen being rotatable around an axis thereof as well as movable in the axial direction;

a printing head arranged opposite to said platen so as to cooperate with said platen to apply an ink of a selected one of said ink saturated members to the paper located between said printing head and said platen, said printing head being movable together with said platen with respect to the paper from an initial printing position to a final printing position;

means for rotating said platen with respect to said printing head;

means for producing a random digit signal each time the printer is supplied with the power source; and

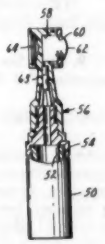
control means operated in response to said random digit signal to control said platen drive means to determine the angular position of said platen at random with respect to said printing head to thereby set any one of said areas of a selected one of said ink saturated members to a position opposite to said printing head.

4,553,871

DEVICE FOR CLEANING PHONOGRAPH STYLUS

Gerald J. Niles, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 1, 1984, Ser. No. 585,160
Int. Cl.[4] A47L *13/16, 13/17*
U.S. Cl. 401—195 **9 Claims**



1. A phonograph stylus cleaning device comprising

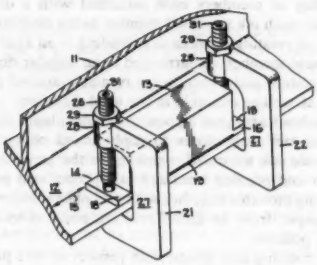
an elongated cylindrical plastic squeeze bottle cleaning-fluid container formed with an orifice,
a cap mounted over the orifice,
a head mounted on the cap, which head includes a small reservoir and is formed with an aperture from the reservoir to the exterior,
the cap and head together forming a valve for allowing cleaning fluid to flow from the container to fill the reservoir,
a porous cleaning pad filling said aperture to allow cleaning fluid in the reservoir to be applied to the phonograph stylus, said cleaning pad comprising a flexible foam core and an exterior cut pile fabric; and
a magnifying mirror mounted on the head for viewing a stylus which has been cleaned.

4,553,872

LOAD CELL CLAMPING APPARATUS

Rangasami S. Chandra, Walnut Creek, and Franklin P. Orlando, Morgan Hill, both of Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Feb. 15, 1984, Ser. No. 580,416
Int. Cl.⁴ F16B *1/00*
U.S. Cl. 403—25 **20 Claims**



1. Apparatus for mounting a load cell enclosure securely to one surface of a beam subjected to bending stress to be measured by the load cell, comprising
flanges extending in opposite directions from each side of the cell enclosure,
a mounting surface and an opposing exposed surface on each flange, and
clamping means having opposing jaws adapted to contact said exposed flange surface and the beam surface opposing the one beam surface, whereby pressure is applied between said mounting surface and the one beam surface to fix the load cell enclosure thereon.

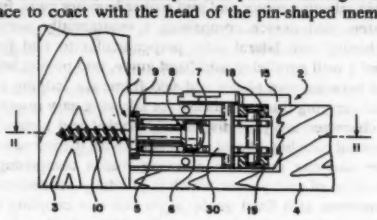
4,553,873

CONNECTING FITTING FOR RELEASABLY CONNECTING TWO PLATELIKE FURNITURE MEMBERS

Luciano Salice, Carimate, Italy, assignor to Arturo Salice S.p.A., Novedrate, Italy

Filed Jun. 9, 1982, Ser. No. 386,572
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1981, 3122978
Int. Cl.⁴ F16B *9/02*
U.S. Cl. 403—245 **22 Claims**

1. A connecting device for releasably connecting two platelike furniture members extending preferably at right angles to each other, said connecting device comprising two fitting members, one fitting member being pin-shaped having an enlarged head and a shank and adapted to be mounted on one of the platelike furniture members and the other fitting member having a spring-loaded locking member adapted to be pivotally mounted within the other platelike furniture member, said spring loaded locking element including, a forked, hook-shaped end portion for straddling the shank of the pin-shaped member behind its head to lock the fitting members to each other, the forked, hook-shaped end portion having a tapered surface to coact with the head of the pin-shaped member to



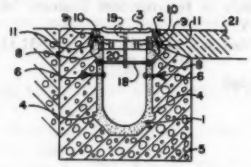
cam the pin-shaped member into a locked position, the other fitting member further including a locking lever being pivotably movable to move the spring-loaded locking element from the locked position to an unlocked position against the bias of the spring-loaded locking element.

4,553,874

SLOTTED DRAINAGE GRATE WITH SUPPORT

Roland Thomann, and Markus Amann, both of Langnau, Switzerland, assignors to Polydrain, Inc., Troutman, N.C.

Continuation of Ser. No. 506,244, Jun. 20, 1983, Pat. No. 4,515,498. This application Dec. 7, 1984, Ser. No. 679,184
Claims priority, application Switzerland, Nov. 23, 1982, 6827/82
Int. Cl.⁴ E01F *5/00*
U.S. Cl. 404—4 **4 Claims**



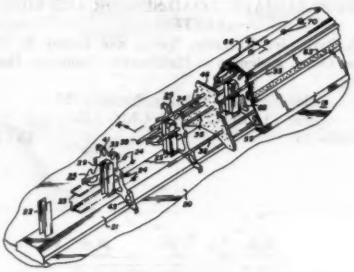
1. A support for a grate of the type comprised of a strip of sheet metal having transverse water drainage slots therein, the edges of said sheet metal being bent twice along its longitudinally extending edges to form two U-shaped side channels whose open sides are mutually opposed, said support comprising:
(a) a U-shaped arch having a midsection intermediate opposing end sections, said arch being open on each end and adapted to be positioned transversely across said grate in contact with opposite sides thereof and intermediate at least some of the slots to provide support to the width of the grate, the midsection of said arch being arcuate and the opposing end sections being planar, said support being adapted to cooperate with a grate having a mating arcuate surface between each slot for receiving the midsection of said support and wherein the side channels of said grate are planar for matingly receiving the planar end sections of said support; and
(b) each end of said arch defining a shoulder having a width and depth sufficient to be positioned in said opposing side channels and provide support to the side of said grate, the opposing end sections of said support being flared apart to each define an arch having a width greater than that of the midsection of said support.

4,553,875

METHOD FOR MAKING BARRIER STRUCTURE

Steven M. Casey, 301 Fanshawe St., Apt. C., Philadelphia, Pa. 19111

Division of Ser. No. 364,411, Apr. 1, 1982, Pat. No. 4,496,264.
This application Oct. 31, 1983, Ser. No. 546,964
Int. Cl.[4] E01F *13/00*
U.S. Cl. 404—6 2 Claims



1. The method of making cast barrier structures consisting of the steps of,

(a) rigidly securing a plurality of upstanding form plate supports to an underlying supporting surface,

(b) securing a plurality of form plates to said plurality of upstanding form plate supports in a longitudinally spaced array over said supporting surface with the major plane of each form plate oriented substantially vertically and transversely to the length of the array,

(c) projecting reinforcing rods longitudinally through the full length of the array of form plates through the planes of the form plates, and securing the rods to the form plates,

(d) positioning side panels longitudinally alongside the form plates on opposite sides thereof and extending the length of the array, said side panels having upper and lower longitudinally extending edges with the lower edges seated on the underlying supporting surface and having irregularities on the inside surface which faces the form plates,

(e) fixedly securing said side panels to said form plates to form with said form plates and underlying surface an open-topped hollow assembly, and

(f) pouring a solidifiable plastic material downward through the open top of said hollow assembly to completely fill the interior thereof and integrally bond together with said form plate supports, said form plates, said reinforcing rods, said side panels and said plastic material when the latter solidifies.

4,553,876

METHOD AND APPARATUS FOR LAYING DRAINS IN FROST-SUSCEPTIBLE GROUND, AND DRAINS LAID IN SUCH GROUND

Oscar S. Arntyr, Wallingat. 37, 11124 Stockholm, and Thord I. Engström, 95018 Bensbyn, both of Sweden

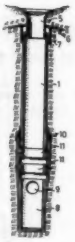
Filed Oct. 19, 1983, Ser. No. 543,543
Claims priority, application Sweden, Oct. 19, 1982, 8205938
Int. Cl.[4] E02B *11/00*
U.S. Cl. 405—50 6 Claims

1. A method for laying surface-water drains, manholes and like structures, particularly in ground which is susceptible to frost, wherein said structures are formed of a drain cover at the ground surface, a drain-bottom part and one or more drain pipes extending from the cover to the drain-bottom part, said method comprising the steps of:

initially positioning said drain-bottom part within the ground below the frost line,

placing a relatively long, upper drain pipe having an outer form which is slightly conical over the extent of said pipe length within the ground, with the pipe turned with its widest end downwards,

inserting the end of said conical pipe into a socket of said drain-bottom part to form a telescopic joint between the



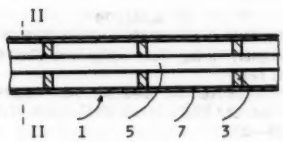
bottom of said pipe and said drain-bottom part socket while providing a joint guard over the joint to accept the relative movement between the pipe and the underlying stationary drain-bottom part,

and wherein the conicity of the pipe is so small that it does not prevent the pipe from accompanying the raising movement of the surrounding ground due to frost, the purpose of the conicity being to facilitate the return of the pipe when the ground thaws.

4,553,877

METHOD OF CONVERTING A CABLE IN THE GROUND INTO A CLOSED GUIDING TRACK FOR INSERTION OF NEW CONDUCTORS

Einar Edvardsen, Idrettsveien, N-1990 Sorum, Norway

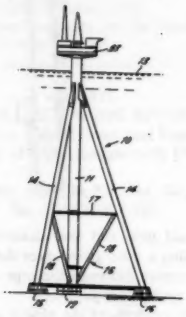
PCT No. PCT/NO81/00032, § 371 Date Feb. 26, 1982, § 102(e) Date Feb. 26, 1982, PCT Pub. No. WO82/00388, PCT Pub. Date Feb. 4, 1982
PCT Filed Jul. 13, 1981, Ser. No. 359,717
Claims priority, application Norway, Jul. 14, 1980, 802117
Int. Cl.[4] H02G *1/12*
U.S. Cl. 405—154 11 Claims

1. A method for converting external casings of existing cables comprising a conductor or a plurality of conductors surrounded by internal insulation material into hollow guiding tracks, which method comprises transforming the internal insulation material over a suitable length of the cable into a form wherein the insulation material occupies less volume between the casing and the conductor or conductors, so as to permit removal of the conductor or conductors from the casing, and thereafter removing the conductor or conductors from the cable.

4,553,878

OFFSHORE TOWER CONSTRUCTIONS AND METHODS OF ERECTION AND INSTALLATION THEREOF

Kees Willemse, Leiden; Jan Meek, Gouda, both of Netherlands, and Flan C. Michelsen, Kailua, Hi., assignors to Heerema Engineering Service, Netherlands

Filed Mar. 2, 1983, Ser. No. 471,490
Claims priority, application United Kingdom, Mar. 5, 1982, 8206509
Int. Cl.[4] E02D *21/00, 23/02, 25/00*
U.S. Cl. 405—203 4 Claims



1. A method of assembling an offshore tower structure having a foundation unit for anchoring in position on the seabed, a central column for securing at its lower end to the foundation unit to extend upwardly therefrom to above the water level in use and support a service platform at its upper end and carry services such as conductors and risers between the seabed and the platform, at least three support legs to be fixed at their upper ends to the column towards the upper end thereof and secured at their lower ends to the foundation unit at points spaced from the lower end of the column to provide support for the column, and a preformed bracing unit to be rigidly connected with the column and legs and between legs, which method comprises:

floating the column on the surface of the water;

securing the bracing unit to the column;

floating each of the legs in turn into position and attaching them to the assembled column and bracing unit one by one, the column being rotated about its longitudinal axis after each leg is attached in readiness for the attachment of the next leg;

anchoring the foundation unit on the seabed; and

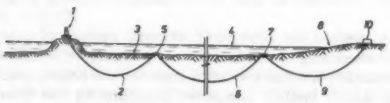
lowering the assembled support legs, bracing unit and column onto the foundation unit.

4,553,879

PIPELAYING IN ARTIC OFFSHORE WATERS

Carl G. Langner, Spring, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 24, 1984, Ser. No. 603,279
Int. Cl.[4] E02D *21/00;* F16L *1/04, 57/00*
U.S. Cl. 405—270 8 Claims



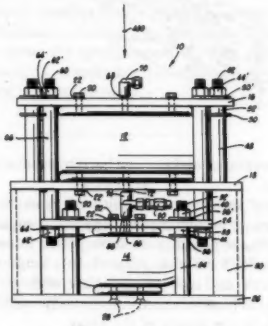
1. A method for laying a pipeline in an offshore area wherein the seafloor is subject to ice gouging, comprising determining the depth to which ice gouging is known to historically have occurred in the offshore area, drilling a series of invert arcuate underground paths, each path extending to below the depth to which ice gouging is known historically to have occurred in the offshore area; placing pipeline segments along these underground paths; connecting adjacent ends of the pipeline segments at a location subject to ice gouging; and protecting the connected ends of the pipeline segments from ice gouging by an ice-resistant structure.

4,553,880

HYDRA-PNEUMATIC LOAD SENSOR AND SIGNAL SYSTEM

James V. Byrd, Jr., Kingston, Tenn., and Danny K. Mints, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jun. 18, 1984, Ser. No. 621,757
Int. Cl.[4] B65G *53/66;* G01G *5/04*
U.S. Cl. 406—23 18 Claims



1. A load sensor, comprising:

first bellows means substantially filled with a substantially compressible fluid under a selected pressure having first load plate means associated therewith;

second bellows means filled with a substantially incompressible fluid having second load plate means associated therewith;

signal line means in communication with said second bellows means; and

load transfer means connecting said first and second load plate means wherein said load is supported by said first bellows means when said load sensor is subjected to a said load of less than or equal to the support provided by said first bellows means filled with said compressible fluid at said selected pressure and wherein said load is supported by said second bellows means when said load sensor is subjected to a said load greater than the support provided by said first bellows means filled with said compressible fluid at said selected pressure.

4,553,881

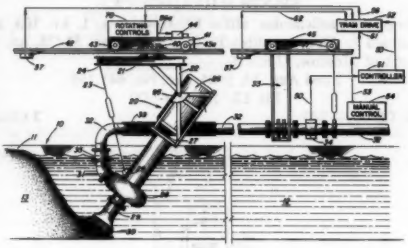
SLURRY PUMP TRAM CONTROL APPARATUS

Richard E. Doerr, Morgantown, W. Va., assignor to Conoco Inc., Ponca City, Okla.

Filed Jul. 23, 1980, Ser. No. 171,605
Int. Cl.[4] B65G *53/66, 53/34*
U.S. Cl. 406—115 4 Claims

1. In a sump substantially parallel and elongated sidewalls defining a longitudinal axis, said sump having ends and a bottom, and adpated for filling with fluid and solid mixture, said sump including rail means positioned above and along the longitudinal axis of said sump, and carriage means for mounting a pump which extends into said sump and means for moving said carriage means along said rail means, said carriage means characterized by:

(a) turntable means rotatably attached to said carriage means,
(b) support means attached between said turntable means and said pump,
(c) turntable rotating means attached between said carriage means and said turntable means for arcuately rotating said turntable means,



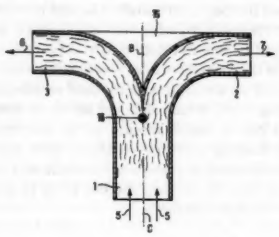
(d) indicator means attached between said carriage and said turntable for generating an indication of the arcuate position of said turntable with respect to the longitudinal axis of said sump, and
(e) tram drive means accepting said generated indication and operating said rotating means to position through rotation of said turntable, said pump means in said sump along a predetermined path parallel to the longitudinal path of said sump.

4,553,882

METHOD AND APPARATUS FOR PNEUMATICALLY CONVEYING FIBER MATERIAL

Walter P. Knappertz, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Mönchen-Gladbach, Fed. Rep. of Germany

Filed Oct. 4, 1983, Ser. No. 539,064
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1982, 3239897
Int. Cl.[4] B65G *53/56*
U.S. Cl. 406—181 **3 Claims**



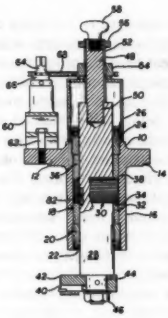
1. In an apparatus for pneumatically conveying fiber tufts in a duct system of a fiber processing plant preparing fiber material for spinning, including a main duct and at least two branch ducts communicating with said main duct in a branching zone; said material being entrained by a gas stream from said main duct into said branch ducts; said main duct having a longitudinal axis passing through said branching zone; the improvement comprising
(a) means for generating a countercurrent;
(b) a flow distributor element supported in said branching zone and having a symmetry plane; said longitudinal axis of said main duct lying in said symmetry plane; and
(c) a tubular bar supported in said branching zone spaced from said flow distributor element in a direction towards said main conduit; said tubular bar having a plurality of openings oriented toward said main duct and being intersected by said symmetry plane for introducing the countercurrent through said openings in said branching zone solely into said main duct parallel to said longitudinal axis.

4,553,883

BORING TOOL WITH FLUID FEED

Daryl G. Brooks, Sanger, Calif., assignor to Kent-Moore Corporation, Warren, Mich.

Filed Feb. 23, 1984, Ser. No. 582,847
Int. Cl.[4] B23B *39/10*
U.S. Cl. 408—130 **6 Claims**



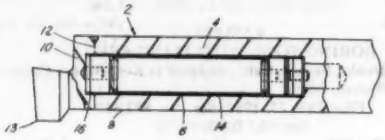
1. In a boring tool for boring out cylinders in engine blocks wherein the tool comprises a housing having a cylindrical bore therethrough, a driveshaft mounted in said housing bore in axial alignment therewith and simultaneously movable with respect to said housing in rotation about and linearly along the axis of said bore, rotary drive means drivingly interconnected with said driveshaft for rotation thereof, mounting means on said housing for mounting said housing on the cylinder of an engine block, a cutting tool mounted upon said driveshaft exteriorly of said housing for machining an engine block cylinder, and linear drive means mounted on said driveshaft for driving said driveshaft linearly along said bore, said linear drive means including a piston mounted on said driveshaft for rotation therewith having a periphery engaging said housing bore and having a spiral groove defined therein, a forward face, and a rear face and a fluid within said bore whereby rotation of said piston transfers fluid from the piston forward face to the piston rear face translating said driveshaft, the improvement comprising, a passage defined in the piston for establishing selective fluid communication between the piston forward and rear faces, a valve means defined in the piston within said passage controlling fluid flow through said passage positionable between open and closed positions, a valve actuator defined on the driveshaft operative to shift said valve means between said open and closed positions, the piston comprising an annular peripheral portion defining the piston periphery and an annular valve portion defining said valve means, said peripheral and valve portions being relatively rotatable about the driveshaft axis and each having a passage defined therein forming, at least, a portion of said piston passage, relative rotational movement of said peripheral and valve portions due to rotation of said driveshaft by said valve actuator aligning and misaligning said passages thereof to produce said open and closed positions, and relative rotation limiting means interposed between said piston peripheral and valve portions limiting relative rotation therebetween.

4,553,884

BORING TOOL AND METHOD OF REDUCING VIBRATIONS THEREIN

Gary W. Fitzgerald, Derry; Robert S. Gulibon, Stahlstown, and Paula M. Penrod, Latrobe, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed May 10, 1982, Ser. No. 376,613
Int. Cl.⁴ B23B *47/00*
U.S. Cl. 408—143 **11 Claims**



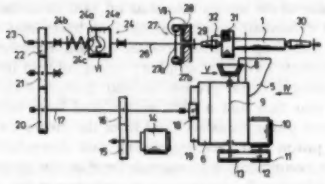
1. A boring tool resistant to vibration comprising: a boring bar having a central bore at one end; a boring bar head with means for attachment to said boring bar at said one end; and a tuned absorber package inserted in said bore for eliminating vibrations in said boring tool, said tuned absorber package having means for being self-contained and transferable between boring bars, said tuned absorber package comprising: an absorber mass; an elastomer support on either end of said absorber mass; a cylindrical canister for receiving said absorber mass and said elastomer supports; an end cap for said cylindrical canister; tuning means interacting with one of said elastomer supports so as to tune the desired vibration frequency of said absorber package; and dampening fluid within the cylindrical canister.

4,553,885

APPARATUS FOR THE INITIAL AND IMPROVEMENT MACHINING OF ACTIVE SURFACE OF STEER CAMS, PARTICULARLY OF BRAKE SPANNERS

Pál Kövári; Tibor Galambos; Ferenc Bogisich, and Imre Téringer, all of Győr, Hungary, assignors to Magyar Vagon-és Gépgyár, Győr, Hungary

Filed May 20, 1982, Ser. No. 380,120
Claims priority, application Hungary, Jul. 6, 1981, 1962/81
Int. Cl.⁴ B23C *3/16*
U.S. Cl. 409—201 **3 Claims**



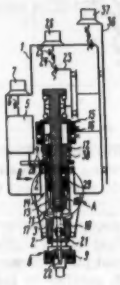
1. In an apparatus for the machining of the active surfaces of steer cams, having a cutting tool and a basic slide mounting the cutting tool for movement along a line, the improvement comprising: means for rotatably clamping a workpiece perpendicular to said line and including a milling headstock; and a kinematic chain for rotating the workpiece and for transforming angular displacement of the workpiece into rectilinear displacement of the slide and cutting tool comprising a motor, a non-reversing free wheel having an internal part rotatable in one direction and an external part secured to the milling headstock, a unilateral claw clutch having one side coupled with the internal part of the free wheel and wherein the claw clutch is operable in the opposite direction than that of the non-reversing free wheel, a first gear, an intermediate shaft connected to the other side of the unilateral claw clutch and the first gear, a driving gear coupled to a driving shaft driven by said motor and coupled to said first gear and a gear and gear rack driven by the driving shaft and coupled to the basic slide.

4,553,886

SPINDLE HEADSTOCK

Georgy A. Vasilchenko, ulitsa Khersonskaya, 1, kv. 103, and Leonid I. Alexeev, ulitsa Fridrikha Engelsa, 31/35, kv. 30, both of Moscow, U.S.S.R.

Filed Aug. 16, 1984, Ser. No. 641,195
Int. Cl.⁴ B23B *47/00*
U.S. Cl. 409—233 **2 Claims**



1. A spindle headstock for a boring head of a multiple-operation machine tool, comprising: a housing; a hollow spindle rotatably installed in said housing; a drive to rotate said spindle; a shank of said boring head, accommodated in said spindle; a hollow tie rod installed in said spindle coaxially with the latter, said tie rod being rotatable together with said spindle and axially adjustable in relation to said spindle as it is connected to said shank of said boring head; a means for axial displacement of said tie rod; members for connection to said shank of said boring head, mounted on the end of said tie rod so that they can radially reciprocate for location; said shank of said boring head being adapted for connection to said members mounted on said tie rod; a bar installed in said tie rod coaxially with the latter, rotatable together with said spindle and said tie rod, and axially movable in relation to said tie rod; a means to drive said bar in the axial direction; toothed members mounted on the end of said bar to mesh with toothed members of a slide bar of said boring head, which slide bar serves to convert axial motion of said bar to radial motion of the carriage of said boring head; a bushing mounted on the tie rod; said bushing being stationary in the axial plane and kinematically coupled to said spindle and said bar to turn the bar so as to engage and disengage said toothed members.

4,553,887

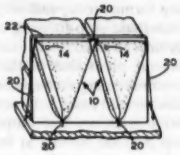
DUNNAGE BAG

Robert L. Reeves, Sheridan, Ark., assignor to St. Regis Corporation, New York, N.Y.

Filed Aug. 4, 1983, Ser. No. 520,175
Int. Cl.⁴ B60P *7/14*
U.S. Cl. 410—119 **12 Claims**

1. An inflatable dunnage bag including an airtight bladder, reinforcing material folded to conform to the shape of and enclosing the bladder, and a valve for inflating the bladder extending through the material and opening into and connected to the bladder, characterized in that the bladder is of

tapered form and the reinforcing material is folded along fold lines so that the material is flat between the fold lines when the



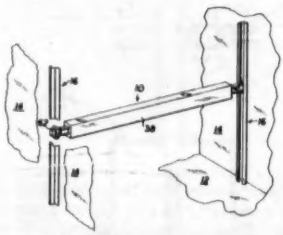
bag is uninflated to form front and back bag walls each of which is tapered in width between the fold lines.

4,553,888

CAPTIVE DUNNAGE FITTING

Charles F. Crissy, and Paul M. Holmes, both of Jackson, Mich., assignors to Aeroquip Corporation, Jackson, Mich.

Filed Jun. 23, 1983, Ser. No. 507,037
Int. Cl.[4] B61D *45/00*; B63B *25/24*
U.S. Cl. 410—144 **13 Claims**



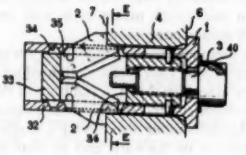
1. A captive dunnage bar system comprising, in combination, a fixed track having spaced, parallel, opposed, elongated first and second sides, said sides including portions defining an elongated slot therebetween of lesser width that the spacing between said sides, first openings defining in said first side and second openings defined in said second side, one of said first openings defining a set with one of said second openings, said openings of a set being longitudinally spaced from each other in the direction of the track length in an unopposed relationship, a fitting extending into said track through said slot having a head located between said track sides, said head having a length and sides defining a width less than the spacing between said track sides permitting said head to be partially rotated within said track about an axis perpendicular to the track length and greater than than the track slot width whereby said head is retained within said track, a first projection extending from one of said head sides and a second projections extending from the other head side, said head projections being offset with respect to each other relative to the head length a distance equal to a track opening set longitudinal spacing and of a length defining a dimension less then the spacing between said track sides when said head is rotated about its axis whereby said projections are received within track openings defining a set at a first head rotative orientation to said track and are removed from said track openings defining a set at a second head rotative orientation to said track permitting longitudinal adjustment of said fitting along said track.

4,553,889

EXPANDING PLUG

Olivier J. Le Dantec, and Charly G. Balage, both of Lyons, France, assignors to Framatome & Cie, Courbevoie, France

Filed Sep. 1, 1983, Ser. No. 528,684
Claims priority, application France, Sep. 3, 1982, 82 15032
Int. Cl.[4] F16B *13/04*
U.S. Cl. 411—21 **1 Claim**



1. Expanding plug intended for closing an aperture provided in a wall accessible from only one side, comprising

(a) a base which is applied against the front face of said wall;

(b) a tubular member connected to said base and having an internal groove;

(c) a central member mounted for movement in axial translation in said tubular member and having a threaded hole along the axis of said aperture, at least two radial recesses and a radial face at the end part of each recess;

(d) at least two gripping members each mounted for sliding movement in a recess of said central member, permitting their radial displacement through pivoting displacement in the plane of the corresponding recess, said gripping members each having a radial shoulder and a radial projection near its rear part received in said internal groove of said tubular member, said plug being so disposed in said aperture that said gripping members are inserted in said aperture with their radial shoulder and radial projection protruding on the rear side of said wall; and

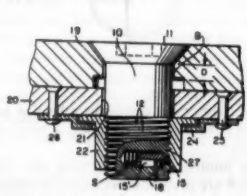
(e) a screw control member screwing in the threaded hole of said central member to effect the axial displacement of said central member and, when the radial face of the corresponding recess contacts the rear part of a gripping member, the simultaneous axial and radial displacement of said gripping member, said radial displacement being obtained by pivoting of said gripping member the radial projection of which is engaged in the internal groove of said tubular member, until the shoulder of said gripping member is applied against the rear face of said wall.

4,553,890

CAPTIVE PANEL SCREW

Bulent Gulistan, 20568 Pinnacle Way, Malibu, Calif. 90265

Continuation-in-part of Ser. No. 388,459, Jun. 14, 1982, abandoned. This application Oct. 19, 1983, Ser. No. 543,501
Int. Cl.[4] F16B *21/00, 39/38*
U.S. Cl. 411—318 **2 Claims**



1. A captive panel screw including, in combination:

(a) a shank having a head at one end and threads at its other end, said shank including a side opening at a point a given axial length from said head;

(b) a catch means positioned in said side opening and radially movable from a first position in which the catch means is wholly received in the opening to a second position in which the catch means partially extends from said opening a given distance, said given axial length being greater than the axial length of a bore in a panel to which the screw is to be held captive and said given distance extending beyond the radius of the bore periphery of the bore in the panel whereby said screw is held captive in said bore when said catch means is in said second position, said catch means comprising

a latch member terminating on its forward end in a single lower sloping cam surface oriented such that urging of the screw inwardly through the bore in the panel retracts the latch member into its said first position in said opening, said latch member also having a single upper sloping cam surface on its forward end so that said forward end is V-shaped with said upper surface intercepting said lower cam surface in a line at the nose of said latch tilted at an angle equal to the helix angle of the threads in a nut receiving said screw,; and

spring means in the opening urging said latch member towards its said second position extending from said opening, said side opening having a hole in its floor extending to the end of the screw, said latch member having a channel on its underside; and

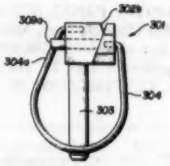
(c) a guide pin received in said hole with its upper end received in said channel for holding said latch member against rotation and limiting its in and out movement between said first and second positions whereby the latch member is prevented from falling out of said opening and whereby should the nut be sufficiently shallow that the screw extends out the exit end of the nut a distance to permit radial outward movement of the latch member, the screw can still be unthreaded from the nut by exerting sufficient upward force and unthreading force such that the latch member sloping upper cam surface and forward end tilt at the helix angle of the nut threads enables the retraction of the latch member into the opening in the screw so that unthreading and removal can take place.

4,553,891

HEADED COTTER PIN WITH SAFETY ANNULAR RETAINING MEANS

Claude Aubrun, Renage 38140 Rives, France

Filed Jan. 7, 1982, Ser. No. 337,874
Claims priority, application France, Jan. 9, 1981, 81 00592
Int. Cl.[4] F16B *21/00*
U.S. Cl. 411—351 **10 Claims**



1. A cotter pin comprising:

a substantially cylindrical pin body which is adapted to be inserted in a pin-receiving member, a head at one end of said pin body,

a substantially annular device forming an open loop, the ends of which are pivotably mounted on opposite sides of said head on substantially parallel transverse axes, said annular device being movable between a closed position and an open position, said annular device when in said closed position being located to surround the pin-receiving member to prevent any undesired removal of said pin body, and said open position being displaced from said closed position to permit said pin body to be inserted in the pin-receiving member or removed therefrom,

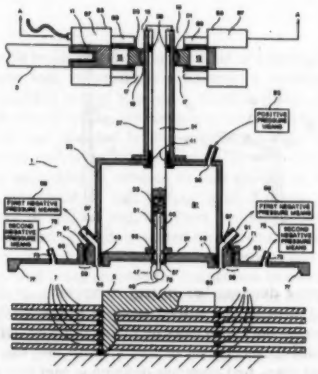
a stop-forming element which is movable independently of any pivotal movement of the annular device, said stop-forming element being formed independently of said head and said annular device, said stop-forming element being mounted transversely on said head on an axis substantially parallel to said transverse pivot axes of the ends of said annular device, said stop-forming element being movable with respect to its axis on said head between a stop position and an inoperative position, said stop-forming element when in its stop position having at least a portion extending in front of said annular device adjacent to a pivoted end thereof so as to maintain said annular device in its closed position, said inoperative position of the stop-forming element being located to permit said annular device to move to its open position so said pin can be mounted on the member or released therefrom.

4,553,892

SELF ALIGNING, LOAD CAPACITY ENHANCING, WORKPIECE HANDLING DEVICE FOR USE WITH A ROBOTIC SYSTEM

James Huffman, Boulder; Kim Brandt, Lafayette, and Alton G. Doutre, Westminster, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Oct. 19, 1982, Ser. No. 435,149
Int. Cl.[4] B65G *59/04*
U.S. Cl. 414—121 **22 Claims**



1. A robot arm attachment tool for handling a plurality of differently configured workpieces, comprising:

means for attaching said tool to the robot arm, said robot arm attaching means having an opening such that a vertically disposed support member is fully free to tilt within said robot arm attaching means;

means for the powered lifting of a workpiece to be handled;

means for adjustably connecting the powered lifting means to the robot arm attaching means, said means having,

a vertically disposed support member, a lower end of which is attached to the powered lifting means,

a bearing assembly, having an inner bearing member securely fastened to the vertically disposed support member and a disk shaped outer bearing member mounted in the robot arm attaching means, such that the vertically disposed support member is free to pivot about the center point of said inner bearing, and

a disk-shaped cavity disposed within the means for attaching the tool to the robot arm, said cavity having its planar surfaces horizontally oriented, the disk-shaped outer bearing slidably mounted in the disk-shaped cavity such that the bearing assembly is free to translate

within the horizontal plane defined by the planar surfaces of the cavity;

means for fixedly engaging a plurality of differently configured workpieces, said means attached to the means for powered lifting;

means for centering said tool over the workpiece to be handled so that means for engaging a workpiece will be properly positioned, and;

means for rigidly holding and returning the means for adjustably connecting the powered lifting means to the robot arm attaching means to a generally central position.

4,553,893

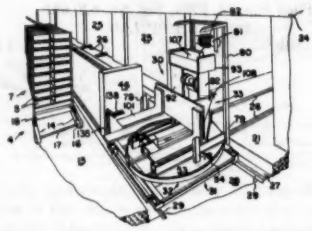
ARTICLE TRANSFER APPARATUS

William C. Kaschner, Alpena, Mich., and Elroy Bobolts, Jr., Pembroke Pines, Fla., assignors to Besser Company, Alpena, Mich.

Division of Ser. No. 558,379, Dec. 5, 1983, Pat. No. 4,505,630, which is a continuation of Ser. No. 104,237, Dec. 17, 1979, abandoned, which is a continuation of Ser. No. 871,597, Jan. 23, 1978, abandoned. This application Feb. 19, 1985, Ser. No. 702,631

Int. Cl.[4] F27B 9/02

U.S. Cl. 414—152 7 Claims



1. In combination with a concrete block curing kiln having a plurality of spaced apart, longitudinally extending compartments extending laterally of a path traversing all of said compartments at corresponding ends thereof, first track means defining said path, longitudinally extending second track means for each of said compartments for transferring a concrete block supporting rack comprising vertically spaced supports mounted on vertically extending legs from one position to another, said apparatus comprising a carriage movable along said path on said first track means; an endless rack conveyor traveling parallel to said path and having spaced apart rack support locators thereon spaced apart a distance corresponding to the spacing between the legs of the racks; rack leg locating means on said carriage movable parallel to said path from a removed position to a position engaging a rack on said carriage; first sensing means carried on said rack leg locating means; locator detecting means positioned adjacent said rack conveyor and past which said rack conveyor moves; said locator detecting means including a support member mounted for movement in line with the path of travel of said rack conveyor to engage a locator thereon, a second sensing means mounted by said support member cooperable with said first sensing means to indicate that said carriage and rack conveyor are in a position in which said rack is transferable between said carriage and rack conveyor; rail means carried by said carriage; a transfer vehicle, incorporating rack lift means for supporting a rack of blocks for transferring a rack between said rack conveyor and carriage, and carrying said rack into or out of any selected one of said kiln compartments; said transfer vehicle being movable on the rail means on said carriage and off it onto the rail means in a selected kiln compartment; drive means for moving said lift means vertically; and driving means powered from said carriage for driving said transfer vehicle off said carriage into any selected one of said compartments and returning it.

4,553,894

METHOD OF AND APPARATUS FOR TRANSFERRING ANNULAR ARTICLES FROM ONE STAGE TO ANOTHER

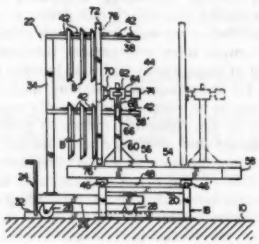
Makito Mukae, and Tsuginori Oshima, both of Higashimurayama, Japan, assignors to Bridgestone Tire Company Ltd., Tokyo, Japan

Filed Dec. 20, 1983, Ser. No. 563,639

Claims priority, application Japan, Dec. 23, 1982, 57-231115

Int. Cl.[4] B65G 1/06

U.S. Cl. 414—331 7 Claims



4. An annular article transfer apparatus for transferring articles from one stage to another, each of the annular articles having a ferromagnetic component element, comprising

at least one article carrier assembly comprising (a) at least one hanger bar operable for having a plurality of filler-fitted annular articles suspended therefrom, and (b) a plurality of spacer elements arranged in an array at predetermined spacings from each other, the annular articles suspended from said hanger bar being axially spaced apart substantially in parallel from each other respectively across said spacer elements and having respective center axes substantially aligned with each other in a predetermined direction of the apparatus, and

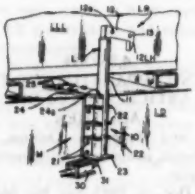
an article transfer assembly comprising (c) a magnetic article carrier member at least partly constructed of permanent magnet and operable for having each of said annular articles transferred from said hanger bar and attached to the article carrier member with said ferromagnetic component element magnetically attracted to said permanent magnet, (d) support means for supporting said magnetic article carrier member, the support means being vertically movable with respect to said hanger bar, (e) first drive means operative to drive said article transfer assembly for movement in said predetermined direction of the apparatus for causing said article carrier member to contact one of said annular articles, and (f) second drive means operative to drive said support means for upward movement with respect to said hanger bar for permitting each of said annular articles to be disengaged from each of said spacer elements, said first drive means being further operative to drive the article transfer assembly for movement in said predetermined direction for causing the annular article contacted by the article carrier member and disengaged from the spacer elements to withdraw from the hanger bar to the article carrier member.

4,553,895

TRUCK LATCH

Lawrence D. Ellis, Monrovia, Calif., assignor to Ellis Industries, Inc., South El Monte, Calif.

Filed Apr. 30, 1984, Ser. No. 605,213
Int. Cl.[4] B65G *67/02*
U.S. Cl. 414—401 **14 Claims**



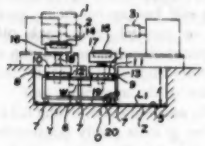
1. A device for restraining a motor vehicle having a predetermined style bumper by releasably coupling the bumper to a loading dock, said device comprising latching means having a restraining member extending outwardly therefrom and adapted for sliding and rotary movement to position the restraining member over said bumper to releasably interlock with said bumper upon engagement therewith and slidably movable out of engagement with said bumper to release same, and means for mounting said latching means to permit the latching means to be bidirectionally axially movable and rotatable relative to the mounting means to permit the latching means to engage and disengage said bumper, said mounting means permitting the latching means to be rotated to a position out of the path of said motor vehicle, said mounting means including means for securing same to a loading dock at a preselected location on a side wall thereof.

4,553,896

TRUCK APPARATUS FOR CONVEYING PARTS

Seiki Yoshida, Aichi, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jan. 4, 1983, Ser. No. 455,552
Int. Cl.[4] B60P *1/02*
U.S. Cl. 414—495 **1 Claim**



1. A truck apparatus for conveying parts to a holder for receiving the parts, said truck apparatus comprising:

first supply rails laid between an end position and a delivering position for the parts,

second supply rails laid perpendicularly to said first supply rails and downwardly vertically displaced relative to the end position of said supply rails,

a shift car longitudinally movably coupled to said second supply rails so as to be movable alternatively between first and second lateral positions,

said shift car including third and fourth rail sets laid perpendicularly to said second supply rails, said third and fourth rail sets each being parallel to and at the same height as said first supply rails, said third and fourth rail sets being aligned with said first supply rails when said shift car is longitudinally alternatively moved between said first and second lateral positions, respectively,

a pair of trucks movably positioned on respective ones of said third and fourth rail sets so that said pair of trucks is alternately movable onto said first supply rails between said end and delivering positions when said shift car is longitudinally alternately moved between said first and second lateral positions,

each said truck including a bearer for the parts having a cradle roller and lifter means for lifting the cradle between a lowered position to accept the parts thereon and a raised position for transferring the parts to the holders when the truck is in said delivering position,

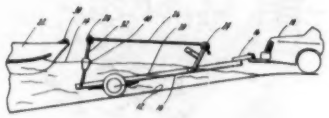
said apparatus further comprising cable bearer means having one end fixed to said shift car and another end disposed relative to said second supply rails such that said cable bearer means, between said one and other ends, is adjacently parallel to said second supply rails for permitting a drive cable to be moved responsive to movement of said shift car between said first and second lateral positions, said one end of said cable bearer means being vertically spaced above said second supply rails to define a vertical bend portion in said cable bearer means, said cable bearer means, by virtue of said vertical bend, thereby linearly moving adjacently parallel to said second supply rails.

4,553,897

FLOAT MEANS FOR CONNECTING THE WINCH LINE OF A BOAT TRAILER TO A BOAT

Thomas V. Briggs, 1368 Ranier, Canton, Mich. 48187

Filed Jun. 14, 1984, Ser. No. 620,682
Int. Cl.[4] B60P *1/04*
U.S. Cl. 414—559 **3 Claims**



1. A boat loading structure for a boat having eye means at one end thereof, comprising:

a boat trailer adapted to be coupled to a towing vehicle, and having a forward end and a rearward end;

a rod and means mounting the rod on the trailer for motion from a lower position to a generally upright position;

a float member mounted on the rod to cause it to move from said lower position toward said upright position as the trailer is moved into a body of water for receiving a boat; and

winch means at the forward end of the trailer including a line mounted on the winch means, the line having hook means for engaging the eye of the boat and means on the rod for engaging the hook means so that a user in a boat floating in the water can disengage the hook means from the rod to connect it to the boat eye.

4,553,898

SWINGABLY MOUNTED TRUCK HOPPER

Leon G. Feterl, Salem, S. Dak., assignor to Core Industries, Inc., Bloomfield Hills, Mich.

Filed Oct. 14, 1983, Ser. No. 541,876
Int. Cl.[4] B65G *65/00*
U.S. Cl. 414—573 **12 Claims**

1. Apparatus for collecting and transporting particulate material from a discharge outlet of a vehicle to receiving means, and adapted to be disposed on a supporting surface comprising:

a collection chamber for receiving particulate material from the vehicle with its configuration permitting it to be positioned directly under the discharge outlet of the vehicle for receiving the particulate material;

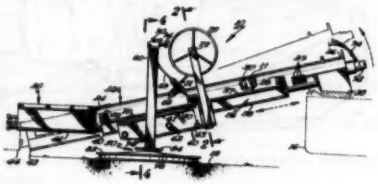
an elongated auger chamber having inner and outer ends and being angularly displaced from the supporting surface and

including a discharge outlet adjacent said outer end, said inner end being adjacent to said collection chamber, and said discharge outlet being positioned so that the particulate material may discharge directly into the receiving means;

said collection chamber and said auger chamber having a rotatable auger supported and disposed therewithin to transport the particulate material from said collection chamber to said discharge outlet;

extension means for extension of said collection chamber lengthwise along the longitudinal axis of said auger chamber between a first position, wherein said collection chamber and said auger chamber are in a retracted storage condition, and a second position, wherein said collection chamber is extended for placement directly underneath the discharge outlet of the vehicle so that the particulate material may fall directly into said collection chamber; and

vertical positioning means for pivotally positioning said collection chamber about a horizontal axis between a lower position, wherein said collection chamber may be readily positioned under a vehicle discharge outlet, and an upper position, wherein said collection chamber is placed



directly underneath and closely abutting the discharge outlet of the vehicle so that the particulate material may be received by said collection chamber with minimal loss; and

a swivel means for rotating said collection chamber and said auger chamber about a generally vertical axis between a use portion, wherein said collection chamber is capable of being placed directly underneath the discharge outlet of the vehicle to receive the particulate material exiting the discharge outlet of the vehicle, and a rest position, wherein said collection chamber and said auger chamber are rotated to a position to the side of the vehicle so that the vehicle may depart its unloading position, said swivel means comprising a support stand disposed adjacent to and underneath said uager chamber and a base which rests on the supporting surface and is rotatably mounted to said support stand, said swivel base and said support stand cooperating to permit the rotating movement of said collection chamber and said auger chamber between said use and rest positions, and said extension means is disposed in cooperative association with said auger chamber and is operative to extend and retract said collection chamber lengthwise along the longitudinal axis of said auger chamber relative to said support stand.

4,553,899

HIGH LIFT TRUCK WITH TELESCOPING BOOM ASSEMBLIES

Riccardo Magni, Via Segantini, 58, Modena, Italy (41100)

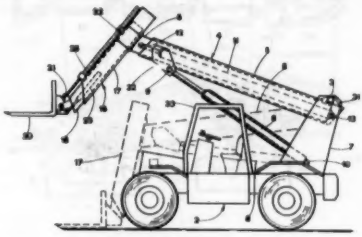
Filed Nov. 16, 1983, Ser. No. 552,461
Int. Cl.[4] E02F *3/72*
U.S. Cl. 414—629 **3 Claims**

1. Self-propelled high lift truck, comprising:

a first telescopic boom-assembly whose bottom end is hinged to mountings at the truck chassis, permitting a rotation about a horizontal axis;

means by which to rotate said first boom-assembly from a lowered, all-but horizontal position, into a fully-raised position, and vice versa;

a second telescopic boom-asssembly whose rear end is immovably fixed to the top end of said first telescopic boom-assembly such that the longitudinal axes of said assemblies create an unvarying angle instrumental in causing said second boom-assembly to lie practically horizontal when said first boom-assembly is in the fully-raised position aforesaid; said second boom-assembly projecting forward in alignment with the longitudinal axis of the truck's prime



mover with said first boom-assembly in said fully-raised position;

means for telescoping said second boom-assembly;

a lifting attachment pivotally mounted to the forward end of said second boom-assembly; and

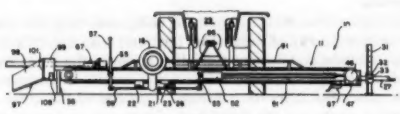
means for rotating said lifting attachment relative to the second boom-assembly in such a way as to maintain a constant lie of the lifting attachment relative to the ground as the inclination of the second boom-assembly is caused to vary.

4,553,900

APPARATUS FOR REMOVING SPRINKLER PIPE FROM A FIELD

William D. Miller; Omar L. Stiff, both of Brawley, and Benardo Mercurio, El Centro, all of Calif., assignors to William D. Miller, Inc., Brawley, Calif.

Filed Apr. 14, 1983, Ser. No. 484,884
Int. Cl.[4] F16L *1/00*
U.S. Cl. 414—745 **12 Claims**



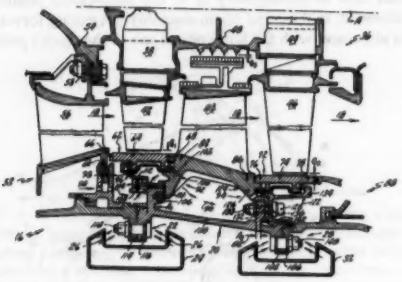
1. An apparatus for removing sprinkler pipe from a field in which the sprinkler pipe is disposed in rows in the field with the sprinkler pipe in each row being formed of serially connected lengths of sprinkler pipe, comprising: an elongate framework, ground engaging means carried by the framework, means on the framework for pulling a length pipe longitudinally of the framework, motive means, control means for connecting and disconnecting said motive means to said pulling means, and at least one attachment carried by said pulling means, said attachment being adapted to engage a leading end of the sprinkler pipe whereby as the pulling means is advanced the serially connected lengths of pipe are withdrawn from the field without the apparatus entering therein and carried onto the elongate framework.

4,553,901

STATOR STRUCTURE FOR A GAS TURBINE ENGINE

Vincent P. Laurello, Guilford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 21, 1983, Ser. No. 564,431
Int. Cl.[4] F01D *25/28*
U.S. Cl. 415—138 **10 Claims**



1. In an axial flow gas turbine engine having an annular flow path for working medium gases and a turbine section through which the working medium gases are passed, the turbine section having a rotor assembly which includes a first rotor disk and a first array of rotor blades extending outwardly from the disk across the working medium flow path, a second rotor disk and a second array of rotor blades extending outwardly from the disk across the working medium flow path, and an inner air seal extending between the disks, the turbine section further having a stator assembly which includes a first outer air seal composed of an array of arcuate segments extending circumferentially about the first array of rotor blades and spaced radially from the first rotor blades leaving a radial gap G_1 therebetween, a second outer air seal composed of an array of arcuate segments extending circumferentially about the second array of rotor blades and spaced radially from the second rotor blades leaving a radial gap G_2 therebetween, an array of stator vanes each of which has an upstream end and a downstream end, the vanes extending axially between the first and second outer air seals and extending radially inwardly across the working medium flow path between the first and second arrays of rotor blades into proximity with the inner seal leaving a radial gap G_3 the rebetween, and means for supporting and positioning the outer air seals and vanes to regulate the gaps G_1, G_2 and G_3 which includes a coolable outer case extending circumferentially about the engine, the improvement which comprises:

stator structure means for supporting and positioning the outer air seals and array of vanes from the outer case at only a first axial location and a second axial location on the outer case which includes

first means for supporting the upstream end of the array of stator vanes and the first array of outer air seal segments which slidably engages each first segment in the circumferential direction and engages each first segment at two axially spaced locations to trap the first segments in the downstream direction and the upstream direction, the first means being attached to the outer case at one axial location, said location being said first axial location,

second means for supporting the downstream end of the array of stator vanes and the second array of outer air seal segments which slidably engages each second segment in the circumferential direction and engages each second segment at two axially spaced locations to trap the second segments in the downstream direction and the upstream direction, the second means being attached to the outer case at one axial location, said location being said second axial location,

first means for flowing cooling air to the coolable outer case to adjust the diameter of the outer case at the first axial location, and

second means for flowing cooling air to the coolable outer case to adjust the diameter of the outer case at the second axial location,

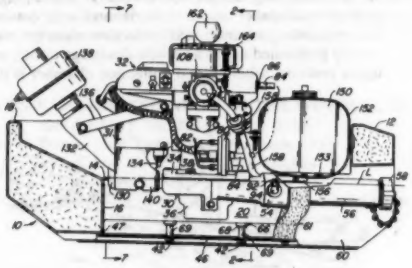
wherein movement of the outer case in the turbine section at the first axial location and the second axial location simultaneously adjusts the clearance gaps G_1, G_2 and G_3 from these two axial locations.

4,553,902

FLOATING PORTABLE PUMP

H. Alfred Eberhardt, Paoli, Pa., assignor to Hale Fire Pump Co., Conshohocken, Pa.

Filed Apr. 18, 1984, Ser. No. 601,582
Int. Cl.[4] F04B *49/00, 21/00, 17/00*
U.S. Cl. 417—34 **12 Claims**



7. A floating portable pump comprising:

a float adapted to be supported on water in a partially submerged floating condition, said float defining a well for containing water,

a centrifugal pump having an impeller mounted on a rotatable impeller shaft, a suction inlet, and a pump discharge,

means supporting said pump on said float with said impeller shaft extending vertically and with said suction inlet submerged in water in said well when said float is in said partially submerged floating condition,

an internal combustion engine arranged to drive said impeller shaft and having a throttle means for controlling the engine speed,

means securing said pump directly to said engine so that said pump and engine are supported together by said float and in an arrangement such that the engine causes rotation of said impeller to cause said pump to draw water from said well through the suction inlet and discharge water from said pump discharge,

means sensing the pressure of the water in said pump discharge,

throttle actuator means for actuating said engine throttle means to reduce the engine speed to an idle condition in response to the sensing of a low water pressure condition in said pump discharge by said sensing means,

said engine including

an ignition circuit for controlling ignition thereof and having a grounding circuit for shutting off the ignition of said engine, and fan means for blowing air in a fan chamber to produce an air pressure condition which increases as the engine speed increases and vice versa,

means sensing the air pressure condition in said fan chamber,

pressure responsive switch means serially connected in said grounding circuit for controlling the grounding of said ignition circuit, and

conduit means connecting said air pressure switch to said fan chamber,

said sensing means being responsive to an air pressure condi-

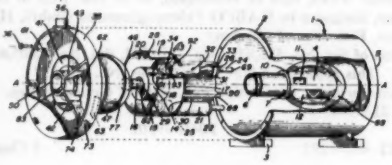
tion corresponding to an overspeed condition of said engine for actuating said air switch means to a control position in which said ignition circuit is grounded to cause a reduction in the engine speed.

4,553,903

TWO-STAGE ROTARY COMPRESSOR

Baruir Ashikian, 505, rue Frechette, Sherbrooke, Quebec, Canada (J1J 2V5)

Continuation-in-part of Ser. No. 460,843, Jan. 25, 1983, Pat. No. 4,460,319. This application Jul. 3, 1984, Ser. No. 627,634
Claims priority, application Canada, Feb. 8, 1982, 395794
The portion of the term of this patent subsequent to Jul. 17, 2001, has been disclaimed.
Int. Cl.[4] F04B *23/10, 1/12;* F01B *13/04*
U.S. Cl. 417—204 **31 Claims**



1. A rotary fluid displacement apparatus having first and second stages and comprising:

(a) a first body and a second body, one of which is held stationary;

(b) means defining an axis of relative rotation between said bodies;

(c) a plurality of piston-vanes mounted in said first body for reciprocating movement relative thereto;

(d) the second body having cam means co-acting with said piston-vanes such that the reciprocating movement of said piston-vanes occurs in the course of relative rotation between said bodies about said axis;

(e) one of said stages including a plurality of closed working chambers defined at least in part between adjacent portions of said piston-vanes, said cam means and portions of said first body, and all being arranged such that the volumes of said chambers increase and decrease in cyclical fashion during said relative rotation;

(f) the other stage including a plurality of closed working chambers comprising elongated bores in said first body in each of which a respective one of said piston-vanes is slidably mounted in sealing engagement with the wall of such bore, with the volumes of said last mentioned working chambers varying in cyclical fashion as said piston-vanes reciprocate in said bores during said relative rotation between said bodies;

(g) first and second stage inlet and exit port means for admitting and releasing fluid from the working chambers of the two stages in the course of said relative rotation and means defining a path for transmitting the fluid from the first stage to the second stage of the apparatus.

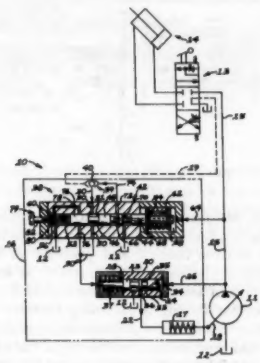
4,553,904

PUMP CONTROL WITH FLUID RESPONSIVE STANDBY PRESSURE

Walter Z. Ruseff, New Lenox, and James E. Schimpf, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/01715, § 371 Date Dec. 21, 1981, § 102(e) Date Dec. 21, 1981, PCT Pub. No. WO83/02304, PCT Pub. Date Jul. 7, 1983
PCT Filed Dec. 21, 1981, Ser. No. 655,289
Int. Cl.[4] F04B *1/26*
U.S. Cl. 417—218 **11 Claims**

1. In a pump control assembly (16) for changing the displacement of a variable displacement pump (11), the assembly (16) having an actuating means (17) for changing the displacement of the pump (11) and a valve member (23) having first and second ends (24,28), the valve member (23) being movable between a first position at which a pump discharge pressure is in communication with the actuating means (17), an infinitely variable intermediate position at which the pump discharge pressure is controllably modulated to deliver a control pressure to the actuating means (17) and a second position at which the pump discharge pressure is blocked from communication with the actuating means (17) and the actuating means (17) is in communication with a tank (12), the first end (24) of the valve member (23) being in continuous fluid communication with the pump discharge pressure for biasing the valve member (23)



toward one of the first and second positions, a signal representative of a load being in selective fluid communication with the second end (28) for biasing the valve member (23) toward the other of the first and second positions in conjunction with a spring (37), the load signal being received from a control valve (13) being in an actuated position, said control pressure maintaining a constant differential pressure between the discharge pressure and the load pressure, the improvement comprising:

means (38) for controllably delivering a predetermined minimum pressure signal to the second end (28) of the valve member (23) in response to the load signal being below the predetermined minimum pressure signal so that the valve member (23) controllably delivers a predetermined control pressure to the actuating means (17).

4,553,905

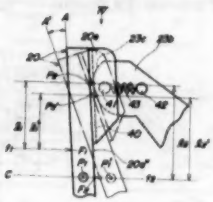
VARIABLE CAPACITY WOBBLE PLATE COMPRESSOR WITH HIGH STABILITY OF CAPACITY CONTROL

James C. Swain, and David L. Thomas, both of Columbus, Ohio, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed May 9, 1984, Ser. No. 608,514
Int. Cl.[4] F04B *1/28*
U.S. Cl. 417—222 **5 Claims**

1. A variable capacity wobble plate compressor comprising: a housing defining therein a crankcase, a lower pressure space, and a higher pressure space; a drive shaft rotatably disposed in said housing; a cylinder block arranged in said housing and defining therein a plurality of cylinders circumferentially arranged around said drive shaft and extending substantially parallel to the axis of said drive shaft, each of said cylinders having an interior thereof disposed for communication with said lower pressure space and said higher pressure space; pistons received in respective ones of said cylinders for reciprocating motions therein; a wobble plate arranged in said crankcase and pivotally and slidably fitted on said drive shaft for rotation together therewith, said pistons engaging said wobble plate for reciprocating motions in said respective ones of said cylinders as said wobble plate rotates; a pivot forming a first

fulcrum supporting said wobble plate at a diametrically central location thereof and axially movable along said drive shaft; and an arm member rotatable together with said drive shaft about the axis of said drive shaft, said arm member having one end face disposed in contact with one side surface of said wobble plate to form a second fulcrum supporting said wobble plate at a location radially spaced from said drive shaft, whereby said second fulcrum is rotatable about the axis of said drive shaft together with said arm member; said wobble plate having an angle of axial inclination relative to said drive shaft variable between minimum and maximum values for varying displacement of said pistons in response to the difference between resultant reaction force exerted by said pistons on compression and suction strokes thereof and pressure in said crankcase acting upon said pistons as back pressure; at least one of said one side surface of said wobble plate and said one end face of said arm member having a camming surface on which said second fulcrum is located, said camming surface having a cam profile and said second fulcrum having a radial position such that said second fulcrum is moved toward the axis of said drive shaft through a substantial stroke with an increase in said angle of axial inclination of said wobble plate from said minimum to said maximum value.



4,553,906

POSITIVE DISPLACEMENT ROTARY COMPRESSORS

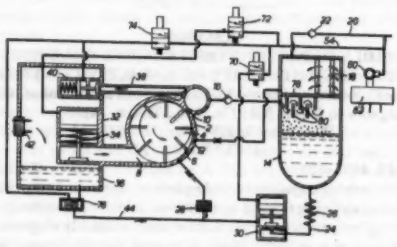
Edward Boller, Halesowen, and Michael R. Williams, Solihull, both of, assignors to Hydrovane Compressor Company Limited, Redditch, England

Filed Sep. 26, 1984, Ser. No. 654,678

Claims priority, application United Kingdom, Sep. 28, 1983, 8326017

Int. Cl.⁴ F04B *49/02, 49/08, 49/10*

U.S. Cl. 417—295 **10 Claims**



1. A positive displacement rotary compressor including a stator, a rotor within said stator, a stator inlet, a first pilot operated valve, said stator inlet communicating with atmosphere via said first pilot operated valve, a stator outlet, a primary lubricant reservoir connected to said stator outlet, a non-return valve disposed between said stator outlet and said primary lubricant reservoir, an auxiliary lubricant reservoir which is always at substantially atmospheric pressure and which is connected to said stator outlet, a second pilot operated valve disposed between said stator outlet and said auxiliary lubricant reservoir, one or more lubricant injection orifices arranged to inject oil into said stator and connected to said primary reservoir and to said secondary reservoir, and a third pilot operated valve disposed between said one or more lubricant injection orifices and said primary reservoir, said compressor further including a pilot control system responsive, in use, to the compressed air load to which said compressor is subjected and arranged to switch said first and said third pilot operated valves from an open position to a closed position, and said second pilot operated valve from a closed position to an open position when said compressed air load falls below a predetermined value.

4,553,907

UNLOADING MECHANISMS FOR AIR COMPRESSORS

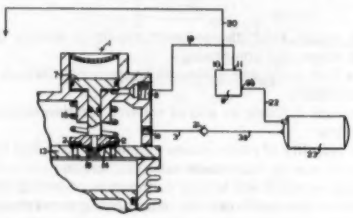
Werner Heger, Lehrte-Kolshorn; Wolfgang Kaltenthaler, and Helmut Wilke, both of Wennigsen, all of Fed. Rep. of Germany, assignors to WABCO Fahrzeugbremsen GmbH, Hannover, Fed. Rep. of Germany

Division of Ser. No. 416,831, Sep. 13, 1982, Pat. No. 4,505,648. This application Nov. 2, 1984, Ser. No. 667,777

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1981, 3136948

Int. Cl.⁴ F04B *49/02*

U.S. Cl. 417—297 **3 Claims**



1. A mechanism for generation of pressure gas for a compressed air brake system comprising, a compressor having a compression chamber which takes in the gas that is to be compressed and exhibits a pressure gas outlet, the compression chamber of the compressor is connected with the pressure gas outlet via a pressure discharge valve, the pressure gas outlet is connected via a pressure line with a consumer which is designed as a storage tank, a pressure regulating system which switches the compressor from a compression phase to an unloading phase when a certain predetermined pressure is reached, the compressor is equipped with a first pneumatic control connection for opening the pressure discharge valve and for opening means associated with the pressure discharge valve to reduce the pressure head on the compressor during the unloading phase, and the first pneumatic control connection of the compressor is connected with a pneumatic control outlet of the pressure regulating system, an operating piston is provided in the compressor for the opening of the pressure discharge valve, said piston is operated by the pressure which is supplied to the first pneumatic control connection, the pressure discharge valve includes a pressure disk that is arranged between a valve support plate and a valve catcher, the valve catcher serves the purpose of supporting the pressure disk against the forces that are a result of the compressed gas acting upon the pressure disk, the operating piston is connected to the valve catcher so that during the unloading phase the valve catcher can be moved away from the valve support plate against the force of a spring, and the force of the spring is sufficient to prevent movement of the valve catcher by the pressure of the compressed gas during the compression phase, the valve support plate includes a part for supporting the pressure disk and is movable toward the open direction of the pressure disk so that a large opening is formed during the

unloading phase, and the operating piston is adapted to move the movable part relative to the valve support plate, the pressure regulating system includes a switch valve which is connected to the pressure line of the pressure gas led to the consumer, said switch valve takes the form of a governor, the governor is connected with the pressure gas system of the consumer via a pneumatic control inlet, the governor is connected with the first pneumatic control connection of the compressor via the first pneumatic control outlet, the governor includes a second pneumatic control for connection to the compressor by way of a second pneumatic control outlet, and a check valve is inserted into the pressure line which originates at the pressure gas outlet of the compressor and leads to the consumer.

4,553,908

HIGH PRESSURE PUMP WITH A FLOW CONTROL VALVE

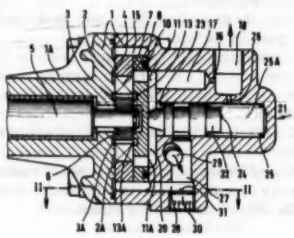
Johann Merz, Bopfingen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Apr. 28, 1981, Ser. No. 258,412

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018650

Int. Cl.⁴ F04B *49/00*

U.S. Cl. 417—310 **3 Claims**



1. In a sliding vane rotary pump of the kind having a flow control valve in the pump disposed between an outlet chamber and a radial passage extending as a bore through a wall of the pump body;

said flow control valve operable by outlet pressure responsive to pump speed to bypass high pressure flow to said radial passage;

said pump having a longitudinal passage intersecting said radial passage and having an angular juncture with said radial passage and connecting to the inlet chamber of said pump, including an inlet passage intersecting said radial passage whereby inlet flow is entrained by high pressure bypass flow upon opening of said flow control valve for flow to said inlet chamber;

the improvement which comprises:

a closure member for the bore through the pump body wall comprising a flow guiding transition piece at the juncture of said radial and longitudinal passages having a face flush with a side of said longitudinal passage whereby said radial passage terminates in said longitudinal passage.

4,553,909

MOTOR-PUMP SET FOR BOREHOLES AND A METHOD OF PROTECTION RELATING THERETO

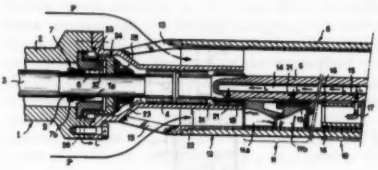
Michel Galais, Angouleme; Christian Sardain, Delle; Jean Fouin, Angouleme; Marcel Arnaudeau, Paris, and Pierre Morin, Levallois-Perret, all of France, assignors to Moteurs Leroy-Somer, Angouleme Cedex, France

Filed Jun. 1, 1983, Ser. No. 500,177

Claims priority, application France, Jun. 4, 1982, 82 09745

Int. Cl.⁴ F04B *17/00*

U.S. Cl. 417—369 **1 Claim**



1. A motor-pump set for boreholes comprising a motor housed within a fluid tight casing (2) and having a motor shaft (3) extending from said casing (2) and coupled axially to a pump housed within a cylindrical body (12) and formed by a plurality of stages mounted on a pump shaft (5) for pumping an external fluid, a packing gland (7) placed on an emergent end of said motor shaft, and a scavenging fluid circuit (4) connected at one end to the inside of said pump and comprising a duct (14) which is bored along an axis of said pump shaft (5) and opens in a radial gap (19*a*) of a bearing (19) which carries said pump shaft (5) and is nearest the motor, said scavenging fluid circuit (L) further comprising an annular portion (31) located around said shafts (3, 5) and limited externally by a tubular section (22) and a conical section (23) which are rigidly fixed to the pump body (12), provision being made within said conical section (23) for a protective member (24) keyed on said motor shaft (3) and located on the pump side with respect to the packing gland (7), the diameter of said protective member (24) being larger than that of said sealing system (7) and said protective member (24) being provided with a peripheral flange (26) which extends to the internal wall of the motor casing (2) at a level corresponding to discharge ducts (29) within said motor casing (2) so that said flange (26) of said protective member (24) forms in conjunction with a packing gland supporting member (8) a flat annular space (28) which is located opposite to said discharge ducts (29).

4,553,910

PULSE DRIVEN HYDRAULIC PUMP

Terry Gosschalk, Gleniffer, Australia, assignor to Nebo Pumps Pty. Ltd., Australia

PCT No. PCT/AU82/00181, § 371 Date Jul. 5, 1983, § 102(e) Date Jul. 5, 1983, PCT Pub. No. WO83/01658, PCT Pub. Date May 11, 1983

PCT Filed Nov. 4, 1982, Ser. No. 522,382

Claims priority, application Australia, Nov. 4, 1981, PF1417; Mar. 26, 1982, PF3324; Jun. 4, 1982, PF4686; Oct. 5, 1982, PF6197

Int. Cl.⁴ F04B *47/08*

U.S. Cl. 417—378 **4 Claims**

1. A pumping system for pumping fluid, said system comprising:

a pump chamber having a pumping element operable to draw fluid into the pump chamber and to discharge fluid from the pump chamber,

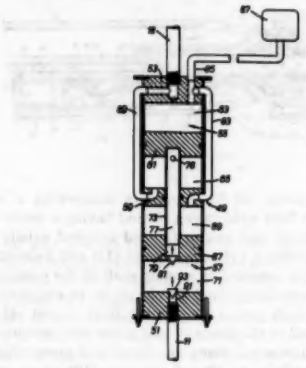
means for storing potential energy operatively associated with said pumping element,

a work chamber connectible to a supply of hydraulic fluid, the work chamber having a work element responsive to changes in hydraulic fluid pressure within said work chamber and

operatively connected to the pumping element and the means for storing potential energy,

whereby in use an increase in hydraulic fluid pressure within said work chamber actuates said work element to cause, simultaneously, an increase in the potential energy in said means for storing potential energy and actuation of said pumping element to draw fluid into the pump chamber, and a subsequent decrease in hydraulic fluid pressure within said work chamber causes said means for storing potential energy to actuate said pumping element to discharge the fluid drawn into the pump chamber,

wherein the means for storing potential energy comprises a



fluid accumulator and first and second potential energy storage chambers; the work element comprises a work piston separating the work chamber from the first potential energy storage chamber, the work piston being movable in response to changes of hydraulic fluid pressure within said work chamber; the pumping element comprises a pump piston separating the pump chamber from the second potential energy storage chamber; an interconnecting rod connecting the work piston and the pump piston together whereby the pump piston is movable in response to movement of the work piston, the interconnecting rod defining a fluid passageway connecting the first and second potential energy chambers.

4,553,911

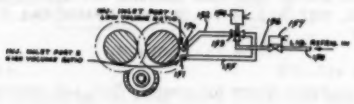
METHOD OF CODING THE OIL IN SCREW COMPRESSORS EQUIPPED WITH AUTOMATIC VARIABLE VOLUME RATIO

Joseph W. Pillis, Hagerstown, Md., assignor to Frick Company, Waynesboro, Pa.

Division of Ser. No. 554,477, Nov. 22, 1983, Pat. No. 4,515,546. This application Feb. 14, 1985, Ser. No. 701,592

Int. Cl.[4] F01C *21/06, 1/16*

U.S. Cl. 418—1 **2 Claims**



1. In a screw compressor having meshing helical rotors on parallel axes and mounted in a housing having intersecting cylindrical bores, whereby the rotation of the rotors produces a varying interlobe volume from an inlet position to a discharge position, means for varying the internal volume ratio, and means for injecting oil into the interlobe volume at a selected location for sealing and lubricating the rotors and for cooling a working gas within the compressor, the method of cooling the oil comprising, injecting liquid refrigerant into the interlobe volume of the rotors at one of two or more predetermined locations at which the interlobe volume varies and prior to the movement of such interlobe volume to the discharge position, and selecting such location in response to the prevailing internal volume ratio.

4,553,912

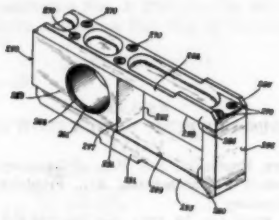
CYLINDER-PISTON OF A ROTARY COMPRESSOR

Marek J. Lassota, 8657 W. Foster Ave., Chicago, Ill. 60656

Continuation-in-part of Ser. No. 318,876, Nov. 6, 1981, Pat. No. 4,431,387, which is a continuation-in-part of Ser. No. 93,599, Nov. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 821,729, Aug. 4, 1977, Pat. No. 4,174,195, which is a continuation-in-part of Ser. No. 692,199, Jun. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 659,430, Feb. 19, 1976, abandoned. This application Nov. 19, 1985, Ser. No. 580,102

Int. Cl.[4] F01C *1/26, 21/08;* **F16J** *1/24*

U.S. Cl. 418—54 **1 Claim**



1. An unsymmetrical cylinder-piston of a rotary compressor comprising:

a body having bearing means for receipt of a rotatable cylinder-piston shaft therein,

two spaced walls extending from said body and having opposing parallel surfaces,

a wall interconnecting said two spaced walls at their ends remote from said body to form an opening in said cylinder-piston for receipt of a rectangular piston in slidable relation therein,

said spaced walls bolted to said body and said connecting wall, and

said body having balancing means capable of making a center of gravity of said unsymmetrical cylinder-piston on or close to the axis of said bearing means.

4,553,913

SCROLL-TYPE HYDRAULIC MACHINE

Etsuo Morishita; Masahiro Sugihara, both of Hyogo; Tsutomu Inaba, Wakayama, and Toshiyuki Nakamura, Wakayama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 7, 1984, Ser. No. 607,917

Claims priority, application Japan, Jul. 1, 1983, 58-120608

Int. Cl.[4] F03C *2/02;* **F04C** *2/04, 11/00*

U.S. Cl. 418—55 **18 Claims**

1. A scroll-type hydraulic machine, comprising:

A. a first stationary scroll having a first scroll wrap;

B. a first orbiting scroll having on one surface thereof a second scroll wrap, said second scroll wrap being interleaved with said first scroll wrap so that, when said second scroll wrap orbits with respect to said first scroll wrap, fluid introduced between said scroll wraps is changed in volume;

C. a first orbiting scroll shaft provided on the other surface of said first orbiting scroll;

D. a second stationary scroll having a third scroll wrap;

E. a second orbiting scroll having on one surface thereof a

fourth scroll wrap, said fourth scroll wrap being interleaved with said third scroll wrap so that when said fourth scroll wrap orbits with respect to said third scroll wrap, fluid introduced between said third and fourth scroll wraps is changed in volume;

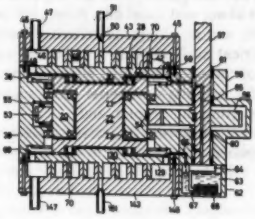
F. a second orbiting scroll shaft provided on the other surface of said second orbiting scroll; and

G. a crank mechanism, said crank mechanism comprising:

(1) a rotatably driven crankshaft having an eccentric through-hole extending lengthwise therethrough,

(2) a plurality of bearings provided in said eccentric through-hole,

(3) an eccentric shaft rotatably supported by said bearings in said eccentric through-hole,



(4) a first eccentric ring mechanism provided at one end of said eccentric shaft and rotatable with respect thereto, said first orbiting scroll shaft being orbitally driven through said first eccentric ring mechanism, and

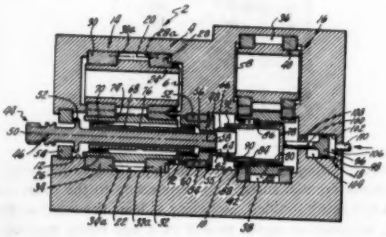
(5) a second eccentric ring mechanism provided at the other end of said eccentric shaft and rotatable with respect thereto independently of said first eccentric ring mechanism, said second orbiting scroll shaft being orbitally driven through said second eccentric ring mechanism, said first and second eccentric ring mechanisms each comprising a ring having an eccentrically formed opening therein for the respective scroll shaft.

4,553,914

METHOD AND APPARATUS FOR MAIN FUEL PUMPING SYSTEM HAVING BACKUP PUMP

Godwin L. Noell, Winsted, and Jack G. Sundberg, Meriden, both of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

Filed Feb. 24, 1984, Ser. No. 583,353
Int. Cl.⁴ F01C *21/00*
U.S. Cl. 418—69 **4 Claims**



1. A pumping system comprising:

a housing;

a main pumping unit mounted in the housing for pumping fluid, the main pumping unit being normally operative;

a backup pumping' unit mounted in the housing for pumping fluid in the event of a seizure or jamming of the main pumping unit, the backup pumping unit being normally inoperative;

a drive member mounted for rotation in the housing for running both the main pumping unit and the backup pumping unit;

a main drive coupling mounted in the housing for drivingly interconnecting the drive member and the main pumping unit such that rotation of the drive member operates the main pumping unit, the main drive coupling including frangible coupling means to insure continued rotation of the drive member in the event of a seizure or jamming of the main pumping unit;

a backup drive coupling for drivingly interconnecting the drive member and the backup pumping unit mounted in the housing adjacent the drive member for axial sliding movement therein, the backup drive coupling being in driving engagement with the backup pumping unit and normally being in disengaged relationship to the drive member;

cooperating means on the drive member and the backup drive coupling to establish driving engagement between the drive member and the backup drive coup'ing upon axial movement of the backup drive coupling; and

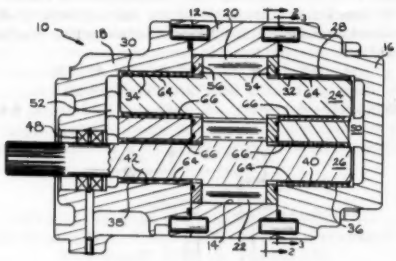
an actuation device mounted in the housing for producing axial movement of the backup drive coupling upon a seizure or jamming of the main pumping unit such that the backup pumping unit may be rendered operative.

4,553,915

LOW PRESSURE LUBRICATION SYSTEM FOR FLUID DEVICE

James M. Eley, Corinth, Miss., assignor to Dana Corporation, Toledo, Ohio

Filed Jan. 8, 1985, Ser. No. 689,811
Int. Cl.⁴ F04C *29/04*
U.S. Cl. 418—102 **12 Claims**



1. For use in a fluid device having a low pressure port, a shaft, a gear carried by the shaft, and a cylindrical bearing in which said shaft is journaled, a low pressure lubrication system comprising first fluid passage means connecting the end of the bearing remote from the gear with the low pressure port, second fluid passage means connecting the end of the bearing adjacent the gear with the low pressure port, a first groove in the bearing extending partially along the bearing from the remote end thereof and a second groove in the bearing extending partially along the bearing from the adjacent end thereof.

4,553,916

ROTARY FORCE FLUID PUMP

David Wacksman, West Palm Beach, Fla., assignor to Katherine R. Smith, Boynton Beach, Fla.

Filed Aug. 9, 1984, Ser. No. 639,101
Int. Cl.⁴ F04C *2/352*
U.S. Cl. 418—173 **14 Claims**

7. A rotary force fluid pump, comprising:

a housing defining a circular cylindrical pumping chamber;

a stacked pair of blade positioning rings mounted for independent rotation around the periphery of the pumping chamber;

a blade assembly pivotally mounted at each end to a different one of the rings and dividing the pumping chamber into two sections which vary in volume as the blade assembly rotates;

eccentrically disposed drive means for slidably engaging and rotating the blade assembly in the pumping chamber, the

blade in turn rotatably driving the rings at different speeds relative to one another, causing the pivotally mounted ends of the blade assembly to move toward and away from one another during rotation;

means in the blade assembly for accomodating the relative movement of the ends of the blade assembly during the eccentric rotation;

means for admitting fluid into the chamber; and,

means for exhausting fluid from the chamber.

4,553,917

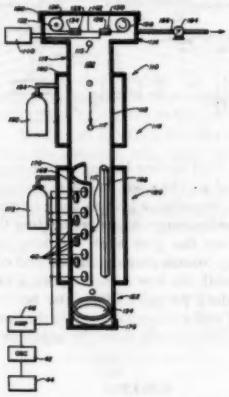
APPARATUS FOR PRODUCTION OF ULTRAPURE AMORPHOUS METALS UTILIZING ACOUSTIC COOLING

Mark C. Lee, La Canada, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 21, 1982, Ser. No. 451,896

Int. Cl.[4] B22F *9/00*; F16C *32/00*

U.S. Cl. 425—6 **6 Claims**



1. An apparatus for forming amorphous containing spheres comprising in combination:

an elongated tower enclosure defining an elongated, vertical closed chamber, having an upper droplet deployment zone followed by a free-fall zone, a first heat exchange zone and a collection zone;

droplet forming means within the upper zone for heating material to above the melting temperature of the material to form a droplet;

deployment means within the upper zone for deploying the molten droplet into the chamber along a line into the free fall zone for spheroiding the droplet;

a first heat exchange means surrounding said first zone for receiving a flow of a first cryogenic liquid for cooling the droplet to form said solid sphere, an elongated acoustical source disposed within the first zone for generating a converging acoustical wave pattern along a line of focus adjacent the line of deployment to cool and stabilize position of the solid sphere as it falls along the line;

said source including an elongated, curved, semicylindrical plate having opposed sides including a plurality of opposed sets of transducers, each set directed at a common focal point along said focal line, means for oscillating the transducers, and an elongated reflector having a curved semicylindrical surface with a radius of curvature less than that of the plate mounted adjacent the focal line of the plate for creating an intense local acoustic field for stably supporting the droplet; and

recovery means within the collection zone for recovering the solid spheres.

4,553,918

TIRE MOLDING MOLD

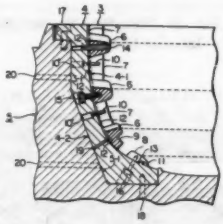
Yasutada Yoda; Seisuke Sueyasu, both of Higashimurayama, and Shoji Futamura, Kawasaki, all of Japan, assignors to Bridgestone Corporation, Tokyo and Institute of Technology & Precision Electrical Discharge Work's, Kanagawa, both of, Japan

Filed May 9, 1984, Ser. No. 608,590

Claims priority, application Japan, May 30, 1983, 58-95302; Sep. 29, 1983, 58-181506; Sep. 29, 1983, 58-181507; Nov. 7, 1983, 58-208467

Int. Cl.[4] B29H *5/02*

U.S. Cl. 425—46 **7 Claims**

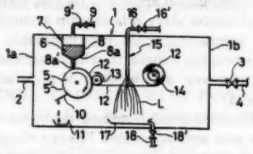


1. A tire molding mold comprising; a profiled ring having an inner circumferential surface corresponding to the outer profile of a tire being molded, including at least the tread surface thereof, wherein an outer profile of a tire being molded is molded at said inner circumferential surface; and a net ring having a faying surface for making contact with said inner circumferential surface of said profile ring, said net ring comprising of a network of ribs and/or lugs for forming the grooves of said tire being molded; wherein said net ring is wholly, or with the part thereof removed, disposed on said profile ring, and is devoid of any surface corresponding to the outer profile of a tire being molded.

4,553,919
APPARATUS FOR PRODUCING POLYACETYLENE FILM

Ichiro Hide, Sapporo, Japan, assignor to Hoxan Corporation, Sapporo, Japan

Filed Aug. 31, 1984, Ser. No. 646,308
Claims priority, application Japan, Aug. 31, 1983, 58-134887[U]
Int. Cl.⁴ B29C *13/00, 23/00*
U.S. Cl. 425—90 **3 Claims**

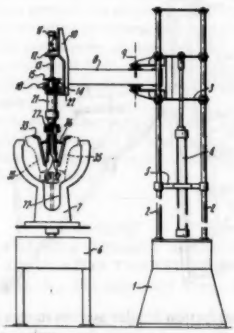


1. An apparatus for producing a polyacetylene film by polymerizing acetylene gas in contact with Ziegler-Natta catalyst comprising: in a vessel to be introduced with acetylene gas
a rotatably driven film forming drum,
a coating member for coating the Ziegler-Natta catalyst on the outer peripheral surface of the drum,
a feeding roller driven reversely to the drum in rolling contact with the drum for drawing a polyacetylene film polymerized with the catalyst on the drum,
a cleaning member for cleaning the drawn polyacetylene film, and
a winding unit for winding the polyacetylene film.

4,553,920
AUTOMATIC MACHINE FOR THE FETTLING OF THE SYPHON OF SANITARY APPLIANCES

Mario Biadigo, Milan, and Gianfranco Zucchi, Brescia, both of Italy, assignors to Ideal Standard S.p.A., Milan, Italy

Filed Jul. 8, 1983, Ser. No. 511,997
Claims priority, application Italy, Jul. 9, 1982, 46842 A/82
Int. Cl.⁴ B29C *25/00*; B44D *5/10*
U.S. Cl. 425—267 **10 Claims**

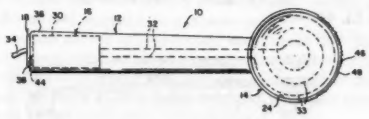


1. An automatic fettling apparatus for fettling the walls of a vessel comprising
a slider means mounted for substantially vertical movement;
an operating head supported by said vertical slider;
a downwardly extending, articulated structure connected to said operating head;
frame members attached to said articulated structure, said frame members being laterally deformable to contact the walls of the vessel in which said articulated structure is to be inserted;
strips of a soft weave or mat of slightly abrasive filiform plastic material attached to said frame members;
first means operatively connected to said operating head and to said articulated structure to impart a vertical reciprocating rectilinear motion to said articulted structure; and
second means operatively connected to said articulated structure to impart stepwise rotary motion, simultaneous with said vertical reciprocating rectilinear motion to said articulated structure.

4,553,921
ELECTRICALLY HEATED ICE CREAM SCOOP

Carla A. Lamphere, c/o George Spector, 3615 Woolworth Bldg, 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Sep. 29, 1983, Ser. No. 536,845
Int. Cl.⁴ A23G *9/00*; B29C *1/00*
U.S. Cl. 425—279 **2 Claims**

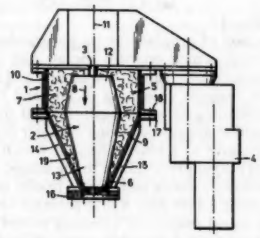


1. An electrical ice cream dipper which comprises:
(a) a handle portion having a finger grip area;
(b) a scoop portion having a semi-spherical bowl therein affixed to the handle portion;
(c) means for heating the scoop portion;
(d) means rotatable in the handle portion for controlling the temperature in the scoop portion;
(e) means mounted in the handle in combination with a deformable portion of said finger grip area for rotating said rotatable means to cause the third said means to coact with the second said means to affect temperature control;
(f) the means for heating the scoop portion comprising an insulated heating wire extending from engagement with the means for controlling the temperature through the handle portion into the scoop portion and disposed in a spiral within the scoop portion to heat the scoop portion.

4,553,922
APPARATUS FOR PROCESSING MATERIAL

Eduard Winner, Weierstrasse 3, CH-9500 Wil, Switzerland

Filed Sep. 21, 1984, Ser. No. 653,495
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1983, 3334012
Int. Cl.⁴ B29F *3/02*
U.S. Cl. 425—381.2 **14 Claims**



1. An apparatus for processing material, comprising:
a housing having an outlet, and a working chamber which includes a conveying section and a processing section,

with said conveying section passing into said processing section; said conveying section receives said material and conveys it in a direction of conveyance into said processing section; said conveying section has a cross section which tapers in the direction toward said outlet; said processing section also has a cross section which tapers in the direction toward said outlet, with the taper of said processing section being more marked than the taper of said conveying section; and

a rotatably driven processing tool which is accommodated in said working chamber, and which during processing conveys saiu material to said outlet.

4,553,923

PRODUCING THERMOPLASTIC ARTICLES PARTICULARLY WITH POROUS WALLS

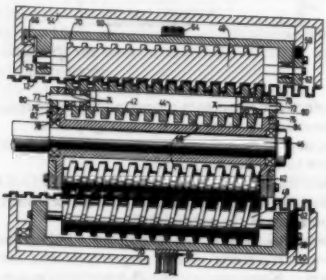
Manfred A. A. Lupke, 10 McLeary Ct., Concord, Ont. L4K 2Z3, Canada

Division of Ser. No. 574,370, Jan. 27, 1984,. This application Nov. 23, 1984, Ser. No. 658,574

Claims priority, application Canada, Feb. 21, 1983, 422058

Int. Cl.[4] B29C *17/00*; B29D *23/03*

U.S. Cl. 425—393 **6 Claims**



1. An expander for enlarging a pipe as it is advanced along a feed path, said expander comprising a plurality of spindles adapted to be located within the pipe with the spindles diverging in a downstream direction and drive means for revolving the spindles about the axis of the pipe.

4,553,924

JACKSHAFT CONTROLLED BOILER COMBUSTION CONTROL SYSTEM

Robert L. Nelson, Orrville, and Donald M. Stough, Jackson Township, Jackson County, both of Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 407,677, Aug. 12, 1982, Pat. No. 4,486,166. This application Jun. 4, 1984, Ser. No. 617,060

Int. Cl.[4] F23N *1/00*

U.S. Cl. 431—12 **1 Claim**

1. A method of programming a programmable combustion control system which controls the air fuel intake ratio of a combustion apparatus supplied with first and second reagents, one of said reagents consisting of fuel and the other of said reagents consisting of a combustive agent including oxygen, said combustion apparatus having a master firing rate demand means responsive to a sensed demand which provides a load index signal output proportional to the sensed demand requirements; a jackshaft means including a master member movably mounted about a first axis, a first actuator responsive to said load index signal output for effecting master member movement, a slave member movably mounted about a second axis having means associated therewith for regulating the amount of one of said reagents supplied, an intermediate linkage strut connected between said master member and said slave member; an intermediate linkage biasing mechanism operably associated with said intermediate linkage strut for effecting the modification of a master slave relationship established by said intermediate linkage strut for regulating the amounts of reagents supplied; means for generating a position control signal, said position control signal generating means producing a predetermined control signal which is a function of the load index signal output; and second actuator means responsive to said positioning control signal and operatively associated with said linkage biasing mechanism for effecting the operation thereof, whereby said master slave relationship is modified prior to the combustion process so that the amount of reagent supplied to said combustion apparatus by said slave member is a function of said master slave relationship as modified by said linkage biasing mechanism; said programmable combustion control system providing a signal to which said linkage biasing mechanism is responsive; said method of programming comprising the steps of:

manually establishing predetermined positions of said jackshaft means and said adjustable linkage biasing means at each of two or more manually established demand requirements as identified by separate load index signals, wherein said predetermined positions optimize the air-fuel ratio at said manually established demand requirement positions; and

storing said predetermined positions of said jackshaft means and said adjustable linkage biasing means for said respective manually established demand requirements in said programmable combustion control system, said system responding to changes in boiler load during boiler operation by adjusting the position of said linkage biasing means in accordance with said stored positional information whereby said programmable combustion control system stores control signals representative of positions of the intermediate linkage biasing mechanism for affecting trim control prior to the combustion process.

4,553,925

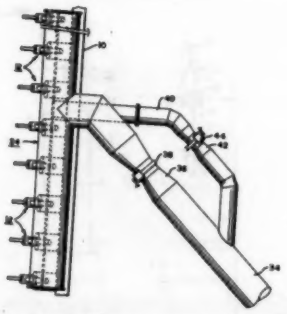
FLOW DISTRIBUTION HEADER SYSTEM

Francis H. Bricmont, Pittsburgh, Pa., assignor to Bricmont & Associates, Inc., McMurray, Pa.

Filed Sep. 24, 1982, Ser. No. 422,531

Int. Cl.[4] F16K *21/00*

U.S. Cl. 431—178 **8 Claims**



5. A flow distribution header system in combination with a furnace for heating workpieces, the combination including a plurality of burners each having a large diameter burner section operative for heating workpieces at a normal production rate to a desired working temperature, and a small diameter burner section operative for maintaining workpieces at a desired working temperature and for heating workpieces at a production rate below normal production rate, a common inlet duct for a fluid to be distributed, an elongated cylindrical conduit having an interior division wall dividing it into first and second elongated headers connected to the small and large

diameter burner sections respectively, the first of said headers being of lesser volume than the second, a first conduit connecting said inlet duct to said first header, a second conduit connecting said inlet duct to said second header, said first conduit being of smaller cross-sectional area than said second conduit, a first throttling valve means in a reduced cross-sectional area portion of said second conduit for controlling a high range of fluid flow from said inlet duct to the large diameter burner section of each of said burners and a second throttling valve means in a reduced cross-sectional area portion of said first conduit for controlling a low range of fluid flow from said inlet duct to the small diameter burner section of each of said burners.

4,553,926

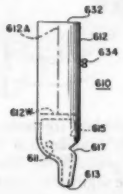
HOLDER COMBINED WITH INSTRUMENT

Serge Crespy, P.O. Box 383, Collingwood, Ontario, Canada (L9Y 3Z7)

Continuation-in-part of Ser. No. 509,606, Jun. 30, 1983, Pat. No. 4,522,584, which is a division of Ser. No. 372,694, Apr. 28, 1982, abandoned. This application Nov. 7, 1983, Ser. No. 549,497

Int. Cl.⁴ F23Q *2/32;* **A63H** *5/00*

U.S. Cl. 431—253 **8 Claims**



1. A cigarette lighter holder comprising:

(a) a pocket sized housing;

(b) a whistle housed in a lower portion of said housing and having whistle walls, a breath input hole, a sound output hole, and a transforming cavity for transforming a breath input into a sound output, said breath input hole being on a first end of said housing;

(c) a lighter cavity within said housing and having an open top at a second end of said housing, said second end being opposite said first end, said lighter cavity shaped and adapted at least partially to receive a cigarette lighter, said lighter cavity bounded by closed side wall portions and by a bottom wall completely closing off said lighter cavity from said breath input hole, said side wall portions, bottom wall, and whistle walls all being integral portions of said said housing; and

(d) securing means to clampingly secure side walls of a cigarette lighter within said lighter cavity, said securing means operable to resist movement of a cigarette lighter out of said lighter cavity.

4,553,927

IGNITOR PROBE ASSEMBLY AND CERAMIC INSULATOR THEREFOR

Raymond L. Collins, Jr., 373 Atterbury Blvd., Hudson, Ohio 44236

Filed Feb. 13, 1984, Ser. No. 579,278

Int. Cl.⁴ H01T *13/04;* **F23Q** *3/00*

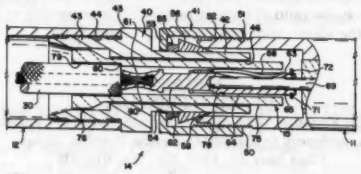
U.S. Cl. 431—264 **7 Claims**

1. An assembly for removably installing an electric ignitor probe within a burner comprising:

pipe means for positioning the ignitor into the burner, said pipe means having a threaded end;

first fitting means having a bore extending axially therethrough, a first end with threads matingly engaging said threaded end of said pipe means, a second and cylindrically configured, nut means interposed between said first and second ends for rotatively manipulating said first fitting means relative to said pipe means;

second fitting means having a mouth providing internal threads engageable with one end of the ignitor probe and a back wall having an aperture therein concentric with said internal threads for receipt of said second end of said first fitting means;



means for rotatably securing said second fitting means to said second end of said first fitting means and positioning said second end substantially concentrically within said mouth of said second fitting means; and

ferrule means affixed to said second end of said first fitting means, positioned within said mouth of said second fitting means and engageable with said end of the ignitor probe when the latter is threadably engaged with said second fitting means.

4,553,928

SWITCHING DEVICE FOR PHOTOFLASH UNIT

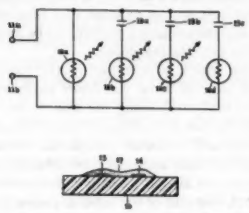
Steven C. Lorenzen, Charleston, and Vaughn C. Sterling, Mattoon, both of Ill., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 25, 1983, Ser. No. 469,551

The portion of the term of this patent subsequent to Dec. 11, 2001, has been disclaimed.

Int. Cl.⁴ F21K *5/02;* **H01B** *1/02;* **H01H** *39/00*

U.S. Cl. 431—359 **10 Claims**



1. A radiant energy responsive switch composition suitable for a photoflash lamp unit which employs a low-voltage electrical circuit comprising in weight percent approximately 55–65% silver oxide, approximately 20–30% oxidized copper metal particulates, approximately 1–3% of an organic polymer binder serving as a fuel during conversion of the silver oxide, and approximately 1–3% of a soluble thermoplastic polyhydroxyether polymer binder serving to provide adhesive bonding action for said switch composition after conversion of the silver oxide takes place, the ratio of organic polymer binder serving as a fuel to the silver oxide not exceeding about 5:100.

7. An improved photoflash lamp unit comprising:

(a) a pair of low voltage type flashlamps,

(b) an electrical circuit into which said lamps are arranged to fire individually and in sequence, and

(c) a solid state radiant energy switching device located external of the lamps and forming part of the electrical circuit, said switching device being located adjacent one of said lamps and disposed to receive radiant energy emit-

ted by that lamp, wherein the improvement comprises a switch composition comprising in weight percent approximately 55–65% silver oxide, approximately 20–30% oxidized copper metal particulates, approximately 1–3% of an organic polymer binder serving as a fuel during conversion of the silver oxide, and approximately 1–3% of a soluble thermoplastic polyhydroxyether polymer binder serving to provide adhesive bonding action for said switch composition after conversion of the silver oxide takes place, the ratio of organic polymer binder serving as a fuel to the silver oxide not exceeding about 5:100.

4,553,929

HEATING FURNACE

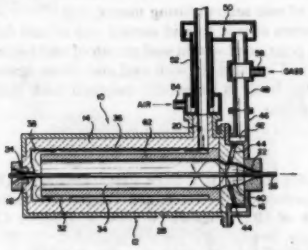
Tadayuki Kanatani, and Yasuo Sakata, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed May 31, 1984, Ser. No. 615,905

Claims priority, application Japan, Dec. 16, 1983, 58-192899[U]

Int. Cl.⁴ F27B *9/28*

U.S. Cl. 432—59 **13 Claims**



5. A heating furnace comprising:

a cylindrical furnace body closed at both ends and defining therebetween an inner peripheral surface, said furnace body including first and second end walls each having a penetrating hole and an exhaust port formed near the first end wall, and into which a material to be heated is inserted through the penetrating holes;

tubular means which is arranged in the furnace body at a prescribed interval from the inner peripheral surface of the furnace body and along the axis of the furnace body, said tubular means defining an interior to establish a heating chamber and an outer peripheral surface which defines, together with said inner peripheral surface of said furnace body, an air-gas passage communicating with the exhaust port, one end of the tubular means in contact with the first end wall of the furnace body, and the other end of the tubular means being positioned near the second end wall of the furnace body and provided with a communication passage effecting communication between the heating chamber and the air-gas passage; and

gas feeding means which is included in the first end wall of the furnace body to conduct combustion gas from the one end of the tubular means to the heating chamber and then to forward the combustion gas to the exhaust port through the communication passage and air-gas passage, wherein said gas feeding means includes a cylindrical ignition chamber which is formed in the first end wall of the furnace body to be coaxial with the heating chamber and communicates with the heating chamber, and said gas feeding means further includes at least one ejection nozzle formed in the first end wall to open to the peripheral surface of the ignition chamber, the ejection nozzle extending along the tangential direction of the peripheral surface of the ignition chamber and being inclined toward the second end wall of the furnace body, and causing the combustion gas to be ejected in a whirling state toward the second end wall of the furnace body along the inner surface of the tubular means.

4,553,930

METHOD AND APPARATUS FOR THE HEAT TREATMENT OF MATERIALS

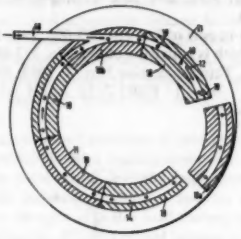
Robert W. Cox; Derek A. Jones, both of Solihull; David L. Walker, Hope Park, and David Hands, Salop, all of England, assignors to British Gas Corporation, London and Rubber and Plastics Research Assoc. of GB, Salop, both of, England

Filed Jul. 12, 1983, Ser. No. 513,142

Claims priority, application United Kingdom, Jul. 17, 1982, 8220782

Int. Cl.⁴ F24J *3/00*; B29D *29/00*; A23P *1/00*

U.S. Cl. 432—120 **12 Claims**



1. In an apparatus for the heat treatment of a product, including a metallic, generally annular heat transfer members for transmitting heat to the product, the latter members comprising a plurality of separate segments joined together in an operationally separable manner, the improvement comprising means defining a respective gas distribution passageway within each said segment, means defining exhaust outlets in said segments, said passageways together defining a closed loop path for receiving and circulating around the heat transfer members hot permanent gas from a hot gas source, and at least one elongate heat transfer passageway formed within each said segment of the heat transfer assembly, one end of each said passageway communicating with said closed loop path defined by the gas distribution passageways and the other end communicating with atmosphere via said exhaust outlet.

4,553,931

HEAT-RESISTING FURNACE ROLL

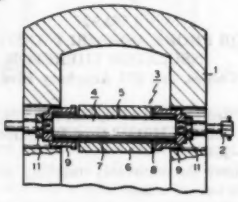
Sadayuki Wachi, Wakayama; Kenichi Ohiwa, Osaka; Yasuo Shimada, Sennan, and Takao Hino, Toyonaka, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Mar. 21, 1984, Ser. No. 591,812

Claims priority, application Japan, Mar. 22, 1983, 58-48376; Jan. 18, 1984, 59-5682

Int. Cl.⁴ F27D *3/00*; B65G *13/06*

U.S. Cl. 432—246 **20 Claims**



1. A heat resisting furnace roll for transporting metal sheets, comprising a support roll and a ceramic sleeve fitted over said support roll to define a radial clearance therebetween wherein said ceramic sleeve is loosely fitted over said support roll even

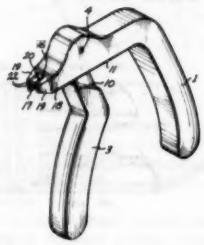
when said support roll exhibits maximum thermal expansion in both radial and longitudinal directions, said radial clearance provided between the outer periphery of the support roll and the inner periphery of the ceramic sleeve, and an axial clearance provided at both axial ends of said ceramic sleeve.

4,553,932

METHOD AND IMPLEMENT FOR PULLING BONDED ORTHODONTIC BRACKETS OFF TEETH

Maclay M. Armstrong, 17001 - 14th NW., Seattle, Wash. 98177; John R. Rogers, Bellevue, Wash., and Steven A. Houser, Everett, Wash., assignors to Maclay M. Armstrong, Seattle, Wash.

Filed Apr. 29, 1983, Ser. No. 490,092
Int. Cl.⁴ A61C 7/00
U.S. Cl. 433—4 **21 Claims**



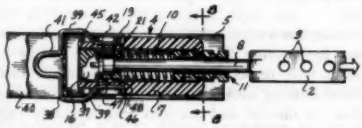
1. A puller for pulling off a tooth an orthodontic bracket bonded to the tooth which bracket has at least one wing, comprising pulling means engageable with a wing of the orthodontic bracket, second-class force-applying lever means for exerting a pulling load force on said pulling means much greater than the power force applied to said lever means while said reaction means is simultaneously applied to the tooth including a lever arm having a fulcrum adjacent to one end, the opposite of said lever arm forming a handle, said pulling means being connected to said lever arm at a location at the same side of said fulcrum as said handle and spaced from said fulcrum a distance which is a small fraction of the length of said lever arm, and reaction means for applying reaction force from said fulcrum to the same tooth simultaneously with the application of pulling force to said pulling means by said force-applying lever means.

4,553,933

FORCE-ADJUSTABLE AND DISCONNECTIBLE CONNECTOR FOR ORTHODONTIC HEADGEAR

Maclay M. Armstrong, 17001 - 14th Northwest, Seattle, Wash. 98177, and Steven A. Houser, Everett, Wash., assignors to Maclay M. Armstrong, Seattle, Wash.

Filed Jan. 23, 1984, Ser. No. 573,100
Int. Cl.⁴ A61C 7/00
U.S. Cl. 433—5 **9 Claims**



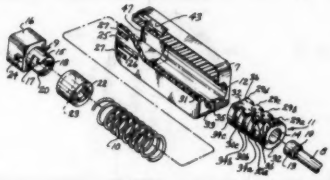
1. A force-producing connector for orthodontic headgear including force-reaction means engageable with the head or neck of a wearer, force-applying means for applying force to the wearer's jaw, a helical compression spring, means for applying force produced by the spring to the force-reaction means and the force-applying means, abutment means engageable by the spring and adjusting means for altering the effective spring length and consequently the force produced by the spring on the force-reaction means and the force-applying means by supporting the abutment means in different positions axially of the spring, the improvement comprising latch means including a first component carried by the abutment means and movable therewith axially of the spring and a second component latchingly engageable with said first component by relative turning of said first and second components about the axis of the spring for limiting movement of the abutment means axially of the spring.

4,553,934

FORCE-ADJUSTABLE AND DISCONNECTIBLE CONNECTOR FOR ORTHODONTIC HEADGEAR

Maclay M. Armstrong, 17001 - 14th Northwest, Seattle, Wash. 98177, and Steven A. Houser, Everett, Wash., assignors to Maclay M. Armstrong, Seattle, Wash.

Continuation-in-part of Ser. No. 573,100, Jan. 23, 1984,. This application May 1, 1984, Ser. No. 606,073
Int. Cl.⁴ A61C 7/00
U.S. Cl. 433—5 **16 Claims**



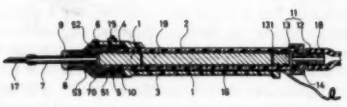
1. A force-producing connector for orthodontic headgear including force-reaction means engageable with the head or neck of a wearer, force-applying means for applying force to the wearer's jaw, a helical compression spring, means for applying force produced by the spring to the force-reaction means and the force-applying means, a casing, abutment means engageable by the spring and carried by the casing and interengageable means for holding the abutment means relative to the casing in different positions axially of the spring to alter the effective spring length and consequently the force produced by the spring on the force-reaction means and the force-applying means, the improvement comprising the interengageable means having spaced projections on the abutment means which form grooves between adjacent projections, said grooves constituting socket means, and projection means engageable in said socket means.

4,553,935

APPARATUS FOR WAXING-UP

Masato Ueno, Hiroshima, Japan, assignor to Kyocera Corporation, Japan

Filed Dec. 20, 1983, Ser. No. 566,174
Int. Cl.⁴ A61C 3/00
U.S. Cl. 433—32 **16 Claims**



1. An apparatus for melting a bar of wax having a front face and directing a flow of the molten wax, the apparatus comprising:

a casing which accommodates said bar of wax;

a nozzle associated with the front of said casing and adapted to receive the flow of molten wax;

a substantially flat heating plate disposed at the rear of said nozzle and positioned substantially parallel to said front face of said bar of wax, and;

feed means for feeding said bar of wax against said heating plate,

wherein said heating plate melts the front of said bar of wax so that the molten wax flows through said nozzle.

4,553,936

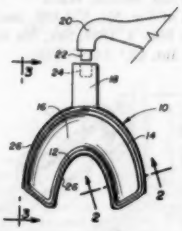
DENTAL IMPRESSION TRAY AND METHOD OF USE

Wu-Lan Wang, Milford, Del., assignor to Dentsply Research & Development Corp., Milford, Del.

Filed Jul. 31, 1984, Ser. No. 636,175

Int. Cl.⁴ A61O *9/00*

U.S. Cl. 433—37 **15 Claims**



1. For use with dental impression material capable of being polymerized by exposure to actinic light, a dental impression tray curved sufficiently to receive at least a partial arch-shaped group of teeth and is channel-shaped in cross-section and wider than the teeth to be received therein, said tray being formed from relatively rigid material capable of transmitting actinic light and having a recess adapted to hold a predetermined amount of said impression material for forming the impression of opposite surfaces of said teeth thereinto, light-receiving means integral with said tray and adapted to receive and transmit light from said light-receiving means to dental impression material held in said recess to effect polymerization thereof to a degree that it has a permanent elastomeric form.

4,553,937

TOOTH MATRIX BAND

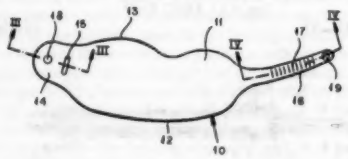
Till Ropers, Alter Marktplatz 4, D-2162 Steinkirchen, Fed. Rep. of Germany

Filed Jun. 27, 1984, Ser. No. 625,072

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1983, 3323085

Int. Cl.⁴ A61C *5/04*

U.S. Cl. 433—39 **9 Claims**



1. A matrix band adapted to encircle a tooth comprising a tooth-encircling central portion formed unitarily with a pair of end portions, one of said end portions being of a width less than that of said central portion and constituting a tab provided with a slot adapted to extend substantially vertical upon said band encircling a tooth, the other of said end portions being of a width less than that of said central portion and of said tab, said other of said end portions forming a tongue adapted to pass through and anchor in said slot whereby upon passage of said tongue through said slot said band can be tightened around a tooth by pulling on said tongue relative to said tab, said end portions having greater thicknesses than said central portion.

4,553,938

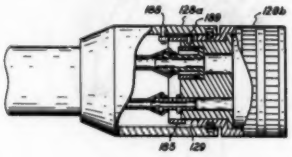
LOW TORSIONAL RESTRAINT INSTRUMENT HANDPIECE HOSE

Robert A. Olsen, Palatine, Ill., assignor to Sybron Corporation, Rochester, N.Y.

Filed Nov. 10, 1983, Ser. No. 550,343

Int. Cl.⁴ A61C *1/08*

U.S. Cl. 433—126 **3 Claims**



1. A hose including a plurality of elongated and generally parallel flexible conduits or connection to an instrument handpiece, wherein the improvement comprises:

a plurality of said conduits having portions of their lengths unattached to each other for independent flexing and twisting movement of said unattached portions; and at least two of said conduits each being equipped with individual swivel connecting means permitting separate and independent swivel action of each such conduit; whereby, resistance to twisting of said hose adjacent the handpiece end thereof and the restoring torque of said hose at said handpiece end is reduced by the absence of attachment between corresponding portions of said plurality of conduits, and by the separate and independent swivel action of each of said conduits equipped with said swivel connecting means, as said conduits are twisted and untwisted about each other,

said hose further including a flexible outer tube that extends at least partially along the length of said hose and contains all of said conduits, a coupling for joining said hose to said handpiece comprising a two-section swivel coupling having one section attached to said outer tube and the other adapted to be removably secured to said handpiece; said sections being generally cylindrical with one of said sections partially received by the other of said sections for free rotation with respect to each other; and retaining means for preventing longitudinal separation of said sections,

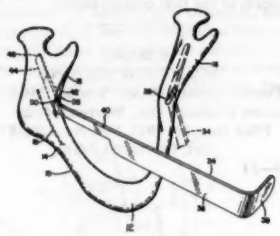
said two-section swivel coupling including rotation-limiting means for limiting the extent of rotation of one of said sections with respect to the other of said sections; said rotation-limiting means comprising a ring rotatably supported on one of said sections and rotatably received within the other of said sections; said ring having a pair of arms projecting axially in opposite directions therefrom; a stop element projecting radially from one of said sections and engageable with one of said arms for limiting the extent of rotation of said section relative to said ring; the other of said sections also having a stop element engageable with the other of said arms for limiting the extent of rotation of said other section with respect to said ring.

4,553,939

TOOL FOR FORMING A RECESS FOR A DENTAL IMPLANT

Harold D. Roberts, 8115 Adera, Vancouver, B.C., Canada (V6P 5E4)

Filed Jun. 27, 1984, Ser. No. 625,214
Int. Cl.[4] A61C *3/02*
U.S. Cl. 433—144 4 Claims



1. A tool for forming a reduced-width secondary recess as an extension of a primary recess in a ramus portion of a mandible for the purpose of installing a reduced-width portion of an implant in the secondary recess, said tool comprising

a gripping handle,

a forwardly extending shank on said handle having an upwardly angled forward portion, said forward portion having a cross sectional dimension of height and thickness capable of being received in a primary recess which has been cut in the ramus portion,

and an extension of reduced thickness on the forward end of said shank arranged to form the reduced width secondary recess by manually forcing said extension into bone area at an end of the primary recess,

said upwardly angled forward portion having a thickness of approximately 2 mm. and said reduced thickness extension having a thickness of approximately 1 mm.

4,553,940

VISIBLE LIGHT CURABLE DENTAL COMPOSITIONS

Francis F. Koblitz, York, Pa., and Roy L. Smith, Milford, Del., assignors to Dentsply Research & Development Corp., Milford, Del.

Division of Ser. No. 550,747, Nov. 10, 1983, Pat. No. 4,491,453, which is a continuation of Ser. No. 406,462, Aug. 9, 1982, abandoned, which is a continuation-in-part of Ser. No. 323,313, Nov. 20, 1981, abandoned, which is a continuation of Ser. No. 182,626, Aug. 29, 1980, abandoned. This application Sep. 18, 1984, Ser. No. 652,172
Int. Cl.[4] A61K *6/08*
U.S. Cl. 523—115 3 Claims

1. A moldable dental restorative composition hardenable by irradiation with visible light, passes American Dental Association Specification No. 27 for color stability and comprising a blend of:

a major proportion of an inorganic filler, and

a minor proportion of a resin component having a viscosity of between about 5,000 and 70,000 centipoises at 25° C. comprising:

a binder resin comprising bis-GMA reacted with a diisocyanate,

a polymerizable acrylic diluent monomer present in an amount sufficient to dissolve said binder resin, and

a photosensitizing system comprising:

from about 0.05% to about 0.50% by weight of said resin component of a non-aromatic alpha diketone, and

an amine reducing agent in an amount sufficient to improve the photocatalytic activity to visible light of said alpha diketone in said restorative composition,

said inorganic filler and said resin component being present in relative amounts such that said restorative composition has a viscosity suitable for filling teeth.

4,553,941

ACETAL AND HEMIACETAL DENTIN AND ENAMEL ADHESIVE PRIMERS

Steven M. Aasen, Lakeland, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 19, 1984, Ser. No. 662,729
Int. Cl.[4] A61K *6/08*
U.S. Cl. 433—228.1 8 Claims

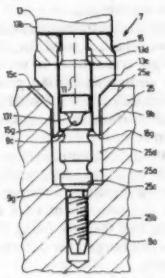
1. A primer-coated dentin surface comprising a layer of a liquid primer composition comprising acetal or hemiacetal adjacent said dentin surface.

4,553,942

DEVICE INCLUDING A SCREW PIN AND A DRIVEN MEMBER FOR SCREWING THE PIN INTO A TOOTH

Franz Sutter, Niederdorf, Switzerland, assignor to Institute Straumann AG, Waldenberg, Switzerland

Filed Nov. 15, 1984, Ser. No. 671,695
Claims priority, application Switzerland, Nov. 17, 1983, 6183/83
Int. Cl.[4] A61C *5/04*
U.S. Cl. 433—225 24 Claims



1. An assembly comprising an axially elongated screw pin arranged to be screwed into a tooth and having a first end and a second end spaced apart in the axial direction, said screw pin has an axially extending threaded part extending from the first end toward the second end and an axially extending engagement part extending from the second end toward the threaded part, and a driven member for engaging said engagement part for driving said screw pin about the axis thereof so that said threaded part can be secrewed into a tooth, means for displacing said driven member out of driving engagement with said screw pin when said screw pin is fixed in a tooth, said engagement part has a slot formed axially into and being open at the second end of said screw pin, said driven member comprises an axially extending rod-like member having a first end and a second end, said rod-like member has an axially extending engagement projection at the first end thereof selectively engageable within said slot, an axially extending gripping member having a first end and a second end and said gripping member arranged to laterally enclose an axially extending portion of said rod-like member extending from the first end of said rod-like member, said gripping member has a plurality of axially extending resilient gripping tongues extending from the first end toward the second end thereof for temporarily laterally gripping and holding said engagement part, and said displacing means comprises that at least one of said slot and engagement projection has laterally spaced axially extending surfaces converging inwardly toward one another in the direction toward the respective first end of said screw pin and said rod-like member so that said engagement projection of said

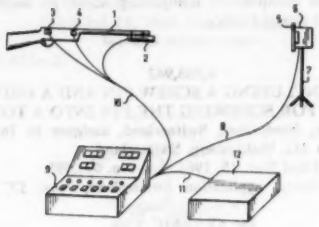
rod-like member moves axially out of said slot when said screw pin is fixed in a tooth.

4,553,943

METHOD FOR SHOOTING PRACTICE

Raimo Ahola; Harri Kopola, and Risto Myllylä , all of Oulu, Finland, assignors to Noptel Ky, Oulu, Finland

Filed Apr. 2, 1984, Ser. No. 595,922
Claims priority, application Finland, Apr. 8, 1983, 831183
Int. Cl.⁴ F41G *3/26*
U.S. Cl. 434—22 **7 Claims**



1. A method for analyzing the aiming and firing process in shooting practice, comprising:

a. attaching an optical electromagnetic radiation light transmitter to the gun which is used for shooting process;

b. actuating said light transmitter to produce a light beam at least during the aiming and firing process;

c. converting the trajectory of the hitting point of said light beam on a target surface, with an electro-optical device having a position sensitive detector, to continuous electric signals representing continuously the position of the hitting point of said beam on said target surface;

d. generating a timing signal by a sensor attached to the gun and reacting to the movement of a drive element, as a trigger, parts attached thereto, firing pin and butt, moving when said gun is discharged for determining the discharge instant of said gun;

e. further processing said continuous electric signals representing the position of the hitting point of said beam on said target surface and said timing signal by a control, display and analyze unit connected to said electro-optic device and said sensor generating a timing signal; and

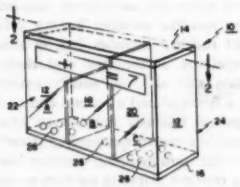
f. displaying the information in the further processed signals.

4,553,944

MATHEMATICAL TEACHING DEVICE

Maureen Flanagan, 49½ Silver St., Middletown, Conn. 06457

Filed Feb. 8, 1985, Ser. No. 699,578
Int. Cl.⁴ G09B *23/02*
U.S. Cl. 434—191 **10 Claims**



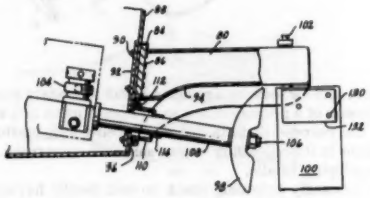
1. A mathematical teaching device for aiding young persons in learning the basics of mathematics comprising a closed container formed by a base, a top plate, a front plate, a back plate and endwalls, said container has a first panel forming a sealed first compartment with one endwall, base, top plate, face plate and back plate of said container, and the second panel forming a second compartment adjacent the first panel and a third compartment adjacent the other endwall of the container wherein said latter two compartments communicate with each other thorugh an opening formed in the second panel between said second and third compartments, a number of items sealed in said first compartment and a number of items located in said second and third compartments wherein the total items in the second and third compartments equals the number of items in the first compartment.

4,553,945

BOAT PROPULSION

Daniel S. Foster, Grosse Pointe Woods, Mich., assignor to Foster Marine Products, Inc., Warren, Mich.

Filed Dec. 16, 1982, Ser. No. 450,287
Int. Cl.⁴ B63H *5/16*
U.S. Cl. 440—51 **4 Claims**



1. A safety shroud for providing a propeller housing, mounting a rudder and controlling flow of water to the propeller, said shroud being adapted for mounting on the rear surface of a boat transom, said shroud comprising inner and outer shaped shells of substantially uniform wall thickness; said outer shell having an outwardly extending flange for attachment to the transom, a longitudinally extending hollow downwardly open reinforcing strut, and outwardly and downwardly curved edge portions; said inner shell having a curved downwardly concave transverse section and extending to the rear of said upper shell, the forward end of said inner shell being longitudinally rearwardly and upwardly curved from a position adjacent the bottom edge of the transom to overlie the propeller zone to cooperate with the transverse curvature to define a water guide channel effective to produce an upward flow of water in which a propeller is positioned for surface running the transverse vertical section of said inner shell at the propeller zone conforming generally to the propeller arc, the portion of the inner shell rearwardly from the propeller zone being of substantially uniform transverse cross-section and the portion of the inner shell between the propeller zone and its forward end having its bottom surface downwardly concave in both longitudinally and transverse vertical cross-section, said inner and outer shells being formed of reinforced plastic and permanently bonded together in zones of substantial area defined by identically shaped curved lateral edge portions.

4,553,946

ACTION TOY AND GAME

R. Lee Miller, Grand Rapids, Mich., assignor to Hilco House, Inc., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 437,368, Oct. 28, 1982, Pat. No. 4,457,097. This application Apr. 2, 1984, Ser. No. 595,822
Int. Cl.⁴ A63H *3/14*
U.S. Cl. 446—327 **6 Claims**

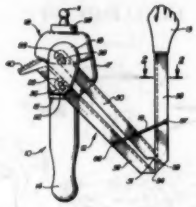
1. A puppet toy, comprising:

(a) a configured body support;

(b) an integral limb assembly comprising an upper limb element and a forearm element, each comprising a base wall and a pair of integral, perpendicular side walls, said upper limb element being pivotally carried by said body

support at a first pivot point, the base wall of said upper limb element depending into said forearm element along the base wall of said forearm element, said forearm element being pivotally carried on said upper limb element at a second pivot point located at the joinder of said base walls, said second pivot point comprising an integral extension of said base walls which is reduced in thickness from that of said base walls whereby said forearm element can pivot with respect to said upper limb element by the flexing movement of said integral extension, said forearm limb element having a free end displaced from said second pivot point, said upper limb element and said forearm limb element having an at-rest position and a striking position;

(c) activation means for activating said upper limb element



and said forearm limb element such that said upper limb pivots about said first pivot point in a first direction of rotation and said depending forearm element simultaneously pivots about said second pivot point in a second direction of rotation opposite to said first direction of rotation, so as to extend said free end of said extendng limb forward to said body support from said at-rest position to said striking position, said activation means including a first triggering means for controlling said activation means, said first triggering means disposed relative to said body support so as to allow an operator to grasp and carry said body support in one hand while controlling said activation means simultaneously with the same hand; and

(d) resilient means for biasing said upper limb and said forearm limb to said at-rest position.

4,553,947

SHIFTING MECHANISM FOR MOTORIZED TOY

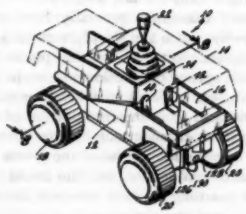
Herbert Weiland, San Pedro; Michael Nuttall, So. Pasadena, both of Calif., and Michihiro Kozaka, Tokyo, Japan, assignors to Tomy Kogyo Corporation, Inc., Japan

Filed Apr. 16, 1984, Ser. No. 601,006

Claims priority, application Japan, Apr. 25, 1983, 58-61887[U]

Int. Cl.⁴ A63H *29/00, 29/24*

U.S. Cl. 446—443 **18 Claims**



1. A shift mechanism for a motorized toy which comprises:

a chassis housing;

a shift lever movably mounted on said housing so as to move back and forth along an X axis and a Y axis;

an electric motor fixedly mounted on said housing, said electric motor capable of producing a rotary output in both a clockwise and a counterclockwise direction;

an electric power supply connected to said electric motor to power said motor;

an elongated output shaft having ends, said elongated output shaft rotatably mounted in said chassis housing;

a mechanical linkage means connecting between said motor and said output shaft for transferring the output of said motor to said output shaft;

said mechanical linkage means connected to said elongated shaft intermediate its ends;

a transfer gear located at each of said ends of said shaft;

a first axle located proximal to one of the ends of said shaft, a second axle located proximal to the other of said ends of said shaft, each of said first and said second axles positioned perpendicular to said shaft, each of said axles including an axle gear located thereon, the transfer gear on one of said ends of said shaft mating with the axle gear on said first axle and the transfer gear on the other of the ends of said shaft mating with the axle gear on said second axle;

an electric linkage means operatively associated with said motor for controlling the direction of rotation of said electrical motor;

an X axis control means for transfer of motion of said shift lever about said X axis to said mechanical linkage means for controlling transfer of said output of said motor to said output shaft;

a Y axis control means for transferring motion of said shift lever about said Y axis to said electrical linkage means for controlling at least the direction of rotation of said motor.

4,553,948

OIL PRESSURE TYPE PNEUMATIC TORQUE WRENCH

Koji Tatsuno, Ando, Japan, assignor to Uryu Seisaku, Ltd., Osaka, Japan

Filed Jan. 3, 1984, Ser. No. 567,801

Claims priority, application Japan, Mar. 4, 1983, 58-32101[U]

Int. Cl.⁴ B25D *15/00*

U.S. Cl. 464—25 **1 Claim**

1. An oil pressure type impulse torque generator for an oil pressure type pneumatic torque wrench, comprising:

a housing;

a generally cylindrical liner having a central axis of rotation, mounted in said housing for rotation about said axis of rotation, said liner having an inner circumferential surface having a pressure-transmitting fluid-filled, hermetically sealed cavity therein, said cavity having a generally eliptical cross section perpendicular said axis of rotation, said generally elipical cross section having a minor axis and a major axis larger than said minor axis, said minor axis and said major axis crossing each other perpendicularly on said axis of rotation at a respective mid-point of said major axis and said minor axis, said liner having first and second radially inwardly extending liner seal surfaces at respective opposite ends of said major axis and third and fourth radially inwardly extending liner seal surfaces at opposite ends of a first line parallel to and spaced a small predetermined distance from said minor axis;

a pneumatically driven rotor for rotatively driving said liner;

a main shaft having a main axis coextensive with said axis of

rotation, mounted in said housing for concentric rotation in said cavity about said axis of rotation, having two slots radially extending therein in opposite directions, and first and second radially outwardly projecting shaft seal surfaces located at opposite ends of a second line extending through and perpendicular to said main axis, said second line extending parallel to and spaced a distance equal to said small predetermined distance from a third line through and parallel to said main axis, said third line extending perpendicularly to a diametrical line extending centrally through said two slots, such that said first and second shaft seal surfaces respectively frictionally engage said third and fourth liner seal surfaces only when said liner and said main shaft are in a first relative angular orientation, are spaced in the same direction from said third and fourth liner seal surfaces at a second relative angular orientation of said liner and said shaft displaced 180° from said first orientation, and be spaced from said first and second liner seal surfaces at third relative angular orientations of said liner and said shaft displaced 90° from said first orientation;

only two blades, slidably mounted in respective ones of two slots and biassed radially outwardly therein so as to frictionally engage said first and second liner seal surfaces when said liner and said main shaft are in said first relative angular orientation; and

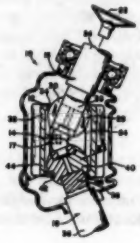
means for applying a rotative impulse force on said first and second blades through said fluid during frictional engagement of said first and second shaft seal surfaces and said first and second blades with said first, second, third and fourth liner seal surfaces, respectively, at only said first relative angular orientation of said liner and said shaft.

4,553,949

UNIVERSAL JOINT WITH CLEARANCE ELIMINATION ELEMENTS

Kevin B. Parks; David D. Jordan, and Alistair G. Taig, all of South Bend, Ind., assignors to Allied Corporation, Morristown, N.J.

Filed Aug. 1, 1983, Ser. No. 519,334
Int. Cl.⁴ F16D *3/20*
U.S. Cl. 464—153 **3 Claims**



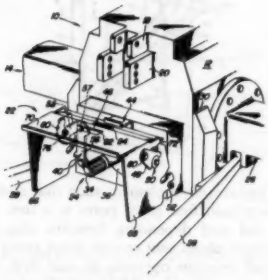
1. A universal joint comprising a housing having a pair of openings leading to a cavity for receiving an input assembly with an input shaft and an output assembly with an output shaft, the input assembly being rotatable to rotate the housing which in turn rotates the output assembly, the input assembly and the output assembly defining variable angular settings relative to the housing as the input assembly, output assembly and housing rotate, the input and output assemblies each including a pair of arcuate bearing shoes rotatable about separate parallel axes, and means cooperating with the bearing shoes, the input and output shafts and the housing to reduce play therebetween, characterized by said means comprising at least one wedge-like element disposed in engagement with said housing and one bearing shoe of each said pair of bearing shoes, each said wedge-like element defining a pair of frusto-conical surfaces engageable with matching frusto-conical surfaces for said input assembly and said output assembly, respectively, a resilient member disposed between said housing and said one wedge-like element to retain said frusto-conical surfaces in engagement with said matching frusto-conical surfaces regardless of any wear of the components of the universal joint.

4,553,950

FLIP-UP SHIELD ASSEMBLY FOR TRACTOR POWER TAKE-OFF

Christian M. Teich, Mannheim, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Jan. 18, 1985, Ser. No. 692,463
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1984, 3402065
Int. Cl.⁴ F16D *3/84*
U.S. Cl. 464—176 **12 Claims**

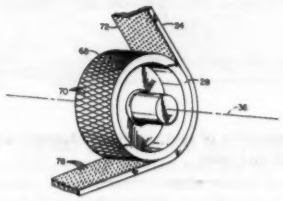


1. In a flip-up PTO shield assembly for a tractor having a PTO shaft protruding from a wall thereof, the shield assembly including an inverted, U-shaped, shield member having a top wall and spaced sidewalls extending above and to the sides, respectively, of the PTO shaft when the shield member is in a shaft guarding position, mounting slots and orientation notches provided in the sidewalls of the shield member, means for mounting tne shield member on the tractor wall including pivots positioned through the mounting slots and forming a horizontal axis for slidably and swingably securing the shield member to the means for mounting for movement radially to and around the horizontal axis, the means for mounting having abutment members extending across the path of movement of the tractor proximate edges of the sidewalls and engageable within the orientation notches to hold the shield member in one of a plurality of positions established by the orientation notches when the shield member is slidably and swingably moved from one of the plurality of positions to another; the improvement comprising: said mounting slots provided in the sidewalls having a generally arcuate shape with first and second portions thereof extending generally horizontally and vertically, respectively, when the shield member is in a position in which the top wall forms a horizontal plane; therebeing at least two vertically spaced orientation notches in the tractor proximate edge of each sidewall, the lower notch in each sidewall being positioned from the first portion of the corresponding mounting slot a distance such that the corresponding abutment member engages therein when the pivots are in the first portions of the mounting slots and the shield member is held in a first shaft guarding position in which the top wall is generally horizontal, and the upper notch in each sidewall is positioned from the upper end of the second portion of the corresponding mounting slot a distance such that the corresponding abutment member engages therein when the pivots are in the upper ends of the second portions of the mounting slots and the shield member is held in a second shaft guarding position below the first shaft guarding position.

4,553,951
NON-SLIP PULLEY AND BELT DRIVE

Robert J. Pavone, South Windsor, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Jun. 2, 1983, Ser. No. 500,383
Int. Cl.[4] F16H 7/02; G01D 15/16
U.S. Cl. 474—148 18 Claims

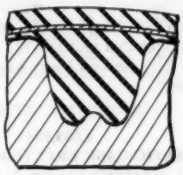


1. A drive for driving a driven member back and forth in one coordinate direction, said drive comprising: a driven member movable back and forth in one coordinate direction between first and second limits, a pair of pulleys spaced from one another in said coordinate direction and each rotatable about an axis perpendicular to said coordinate direction, one of said two pulleys being a drive pulley and the other an idler pulley, an endless metal belt trained about said two pulleys so as to have a first run extending along and parallel to said coordinate direction and a second return run, means for moving said two pulleys toward and away from one another along said coordinate direction so that their displacement from one another may be set to tension said belt and eliminate slack in both of said runs, means connecting said driven member to said belt along said first run, and means driving said drive pulley in either direction about its aforesaid axis to in turn drive said belt and said driven member, said drive of said metal belt as a result of said connection to it of said driven member being such that as said drive pulley is rotated in one direction or the other to move said driven member between said first and second limits of its movement in said one coordinate direction a given point on said belt will never pass over said drive pulley more than once and any part of said belt which passes over said drive pulley will not pass over said idler pulley, said metal belt comprising a main body made of one metal and a soft layer of another metal carried by said main body, said metal of said main body having a yield strength substantially higher than that of said soft layer and said metal of said main body being substantially harder than said metal of said soft layer, said soft layer having a face engaging said drive pulley, said face of said soft layer before said belt is initially trained over said two pulleys having a substantially smooth surface and said drive pulley having a circumferential face engaging said metal belt which drive pulley face has on it an array of small protuberances made of a metal harder than that of said soft layer of said belt so that said proturberances of said drive pulley, when said belt is first trained over said two pulleys and said drive pulley driven in both directions with said belt tensioned by said two pulleys, press into said smooth face of said softer metal of said belt and form therein permanent depressions arranged in an array matching that of said protuberances which mesh with said protuberances to thereafter provide a positive slip-free drive between said drive pulley and said belt with each depression of said belt always receiving the same proturberance of said pulley.

4,553,952
TOOTHED-BELT AND TOOTHED-PULLEY TRANSMISSION

Giorgio Tangorra, Monza; Mario Clcognani, Milan, and Vincenzo Macchiarulo, Chieti, all of Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed Feb. 18, 1983, Ser. No. 467,793
Claims priority, application Italy, Feb. 26, 1982, 19873 A/82
Int. Cl.[4] F16G 1/28; F16H 55/30
U.S. Cl. 474—153 8 Claims



1. A toothed-belt and toothed-pulleys transmission, comprising:

a toothed-belt comprising an annular body of elastomeric material having a tension-resistant structure embedded therein;

a plurality of deformable teeth formed from an elastomeric material, said teeth being cantilevered from one side of the annular body and having a body comprising side, top and bottom portions;

a plurality of grooves separating the individual teeth of said plurality of deformable teeth from one another;

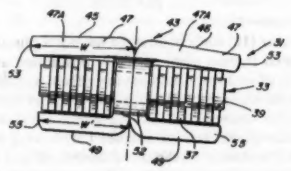
a plurality of toothed-pulleys, said toothed-pulleys having a plurality of rigid teeth formed from a rigid material, said toothed-pulleys being further characterized by the presence of a plurality of grooves which separate the individual teeth of said plurality of rigid teeth, said grooves having bottom and side portions;

means for widening the bodies of the deformable teeth of the toothed-belt, said means being interposed between the tops of the deformable teeth of the toothed-belt and the bottom portion of the pulley grooves; said means for widening the bodies of the deformable teeth of the toothed-belt comprising at least one slot corresponding to the top of each tooth and at least one protuberance cantilevered from the bottom portion of the grooves of the toothed-pulleys' toothing, said protuberance being wedgeable into said slot.

4,553,953
CHAIN-BELT

Thomas J. Bock, Streamwood, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 29, 1984, Ser. No. 645,189
Int. Cl.[4] F16G 5/16
U.S. Cl. 474—201 8 Claims



1. A power transmission chain-belt especially adapted to drivingly connect the pulleys of a pulley transmission wherein each pulley is constructed of a pair of generally conical flanges, said chain-belt comprising:

a plurality of sets of links, the adjacent sets of which are interleaved with one another;

each set of links defining a pair of sub-sets of links and each pair of sub-sets of links defining a space therebetween; and

pulley-engaging means associated with each pair of sub-sets of links to drivingly engage said pulley flanges as the chain-belt wraps a pulleys, said pulley-engaging means comprising a pair of generally C-shaped members, each member having a pair of spaced arms and a body portion joining the arms, the body portions of each pair abutting one another and each defining an aperture, pivot means extending through said apertures and through adjacent sets of interleaved links to thus permit articulation of the chain-belt; such that each arm of each member traverses a sub-set of links, and each arm has an end for engaging a pulley flange.

4,553,954

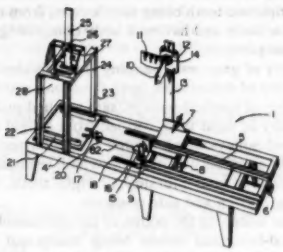
AUTOMATIC CASE ERECTOR AND SEALER

Peter C. Sewell, Vancouver; Gregory E. Rundle, Richmond, and Karl L. Hanson, Abbotsford, all of Canada, assignors to Western Packaging Systems, Ltd., Richmond, Canada

Continuation of Ser. No. 255,095, Apr. 17, 1981, abandoned. This application Sep. 16, 1983, Ser. No. 532,824

Int. Cl.⁴ B31B *5/02*

U.S. Cl. 493—309 **31 Claims**



1. A method of gripping a penetratable case flat on a case erecting apparatus which comprises impaling an edge of the flat with a sharp pin which extends into the flat between and parallel to the two outside surfaces forming the flat, wherein the case flat is constructed of corrugated cardboard and the pin extends into one of the spaces formed by the corrugation of the cardboard.

4,553,955

MULTI-ANGLE ADAPTER FOR FIXED ANGLE CENTRIFUGE ROTOR

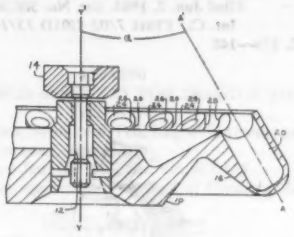
Kin C. Lam, Mountain View, and Ronald K. Williams, Milpitas, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 1, 1984, Ser. No. 616,331

Int. Cl.⁴ B04B *5/02*

U.S. Cl. 494—16 **4 Claims**

1. A rotor (10) for a centrifuge having a plurality of cavities (20) formed therein symmetrically positioned about the rotational axis of said rotor, and having a fixed angular relationship with the rotational axis of said rotor, said cavities comprising a non-circular cross-section having symmetry about at least one longitudinal plane; and an adapter (24) having a body with a cross-section similar to the cross-section of said rotor cavities such that said adapter may be matably inserted into a cavity in a plurality of rotational positions about a longitudinal axis of said cavity, said adapter having formed therein a receiving chamber (26) through an end surface of said adapter, said receiving chamber having an oblique angular relationship with a longitudinal axis of said adapter whereby an adapter can be matably inserted into a cavity of said rotor with a selected rotational alignment about said cavity axis to determine a select



angular relationship of said receiving chamber with the rotational axis of said rotor.

4,553,956

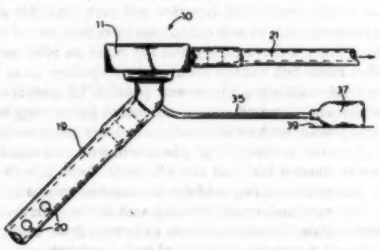
SHUNT VALVE AND METHOD OF USE

A. Bromley Muller, Kinnelon, N.J., assignor to Becton, Dickinson and Co., Paramus, N.J.

Continuation of Ser. No. 414,990, Sep. 3, 1982, Pat. No. 4,475,899. This application Sep. 11, 1984, Ser. No. 635,331

Int. Cl.⁴ A61M *27/00*

U.S. Cl. 604—9 **2 Claims**



1. An operable implantable ascites shunt valve comprising:

a housing containing a valve seat, inlet means for receiving ascites fluid from the peritoneal cavity and outlet means;

normally closed valve means movably positioned in said housing resting against said valve seat and responsive to fluid pressure in said inlet means for allowing fluid flow between said inlet means and said outlet means; and

manually activatable means for controllably contacting and forcing said valve means from said valve seat into an open position to assure fluid flow between said inlet means and said outlet means in the event said valve means is unresponsive to fluid pressure in said inlet means, said manually activatable means allowing manual activation at a location removed from said housing.

4,553,957

IRRIGATION/ASPIRATION HANDPIECE

Rodger W. Williams, and Charles W. Atwood, both of Nashville, Tenn., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed May 3, 1983, Ser. No. 491,222

Int. Cl.⁴ A61M *3/00*

U.S. Cl. 604—43 **20 Claims**

1. An improved apparatus for supplying fluid to and aspirating fluid from a surgical site, said apparatus comprising:

a handle member having first and second closed opposite ends and a hollow intermediate interior means forming a reservoir

inlet means for supplying fluid to the hollow interior portion of said handle member from said second end;

outlet means for conducting fluid out from said second end;

first cannula means extending from said outlet means at said second end of said handle member, through said hollow interior portion and out through said first end for aspirating fluid from said surgical site; and

second cannula means disposed in fixed positional relation to and circumscribedly about a portion of said first cannula means and extending and terminating from within said hollow interior portion out through said first end of said handle member, said second cannula means being radially

spaced from said portion of said first cannula means to define a flow passage between said first and second cannula means, said second cannula means having a first opening in fluid communication with said inlet and said flow passage positioned in fluid communication with said hollow interior means of said handle member and a second opening to said flow passage positioned outside said handle member and a second opening to said first end;

whereby said hollow handle intermediate interior means serves as a reservoir for fluid delivered thereto from said inlet means, and whereby pressurized fluid in said hollow handle interior portion is expelled therefrom through said first opening, said flow passage and said second opening.

4,553,958

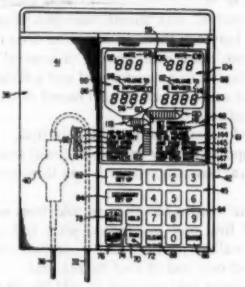
IV DELIVERY CONTROLLER

Andrew D. LeCocq, Columbia, Md., assignor to Quest Medical, Inc., Carrollton, Tex.

Filed Feb. 4, 1983, Ser. No. 463,976

Int. Cl.⁴ A61M *5/16*

U.S. Cl. 604—67 **31 Claims**



1. An apparatus for use in the infusion into a patient of a primary fluid from a primary container and a secondary fluid from a secondary container, the secondary fluid being infused at a first predetermined rate, such rate continuing until a predetermined volume of fluid is infused and the primary fluid sequentially being infused at a second predetermined rate, said apparatus comprising:

container display means providing a visible representation of the primary and secondary containers;

infusion data display means for displaying a first display, in association with the visible representation of the secondary container, of the first predetermined rate and instantaneous infusion data for fluid infused at the first predetermined rate, and for displaying a second display, in association with the visible representation of the primary container, of the second predetermined rate and instantaneous infusion data for fluid infused at the second predetermined rate, said infusion data display means displaying only the first display while fluid is being infused at the first predetermined rate, and only the second display while fluid is being infused at the second predetermined rate; and

flow activation display means for generating a visible indication of the activation of fluid flow from the primary and secondary containers to the patient.

4,553,959

URETHRAL CATHETER

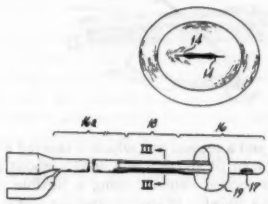
David S. Hickey, Fallowfield, and John C. Brocklehurst, Wilmslow, both of England, assignors to The Victoria University of Manchester, Manchester, England

Filed Jan. 21, 1983, Ser. No. 460,041

Claims priority, application United Kingdom, Jan. 27, 1982, 8202371

Int. Cl.⁴ A61M *25/00*

U.S. Cl. 604—96 **11 Claims**



1. A urethral catheter comprising a resilient tube open at the proximal and distal ends respectively, the tube wall, throughout at least a portion of that part of the tube to be situated within the urethra, being deformable; having a certain normal cross-sectional area in an open, non-deformed state, to which it returns freely in the absence of external transmural pressure; being sufficiently compliant to conform freely to the internal shape of the urethral lumen thereby substantially preventing the by-pass of urine; and being sufficiently self supporting and flexural to an open configuration such that the maximum transmural pressure required to collapse the tube to half said normal cross-sectional area is 100 cm water gauge.

4,553,960

PERITONEAL FLUID TREATMENT APPARATUS, PACKAGE AND METHOD

Harrison Lazarus, 843 13th Ave., Salt Lake City, Utah 84103, and James A. Nelson, 1708 Forest Hills Dr., Salt Lake City, Utah 84106, assignors to Harrison Lazarus and James A. Nelson, both of Salt Lake City, Utah, a part interest

Division of Ser. No. 423,034, Sep. 24, 1982, Pat. No. 4,479,792, which is a continuation of Ser. No. 181,219, Aug. 22, 1980, Pat. No. 4,351,333, which is a continuation of Ser. No. 945,525, Sep. 25, 1978, abandoned, which is a division of Ser. No. 722,752, Sep. 13, 1976, Pat. No. 4,128,173, which is a continuation of Ser. No. 626,323, Oct. 28, 1975, abandoned. This application Jul. 20, 1984, Ser. No. 632,956

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—158 **6 Claims**

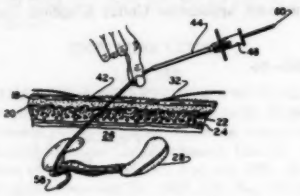
1. Peritoneal fluid treatment apparatus comprising:

intravascular catheter apparatus comprised of a first cannula connected to a hub and a stylet having handle means affixed at its first end and a sharp point at its second end, said stylet being removably positioned within said cannula so that said sharp point extends slightly beyond said cannula at the end opposite said hub, and wherein said stylet is removed from said cannula and hub after said cannula is positioned through the peritoneum;

flexible guide means sized from about 20 to about 50 centi-

meters in length and from about 0.5 millimeters to about 3 millimeters in diameter for insertion into the peritoneal cavity through said first cannula, said guide means being sized in cross-section to fit within said first cannula and in length to be substantially longer than said first cannula, said guide means having a first end which is blunt for insertion into the peritoneal cavity, and said guide means being a stainless steel piano-wire-like wire made of a refractory metal having substantial flexibility from its first end to a point from about one-third to one-half the length of said guide means measured from said first end and thereafter said guide means has less flexibility along its length to its second end;

a second cannula having a first end which remains anterior



the patient and a second end which is tapered and sized in cross-section to fit slidably and snugly about said guide means, said second cannula being a flexible plastic-like tube having a plurality of spaced apart apertures formed in it from its second end to a point about one-third to one-half along its length for insertion into the peritoneal cavity with said apertures substantially therewithin, said second cannula being inserted over said guide means upon removal of said first cannula, said second cannula being sized in length to be substantially longer than said first cannula and in cross-section sufficient to allow said guide means to pass therethrough; and

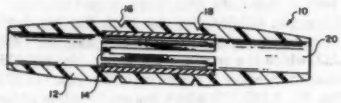
connector means adapted to the first end of said second cannula for connection to peritoneal fluid operation means upon removal of said guide means.

4,553,961

SUTURE SLEEVE WITH STRUCTURE FOR ENHANCING PACING LEAD GRIPPING

Peter J. Pohndorf, Miami Shores, and Walter H. Wesner, Plantation, both of Fla., assignors to Cordis Corporation, Miami, Fla.

Filed Apr. 18, 1984, Ser. No. 601,596
Int. Cl.[4] A61M *25/00*
U.S. Cl. 604—175 **26 Claims**



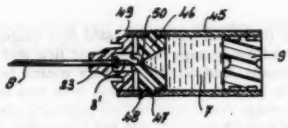
1. A suture sleeve assembly comprising a suture sleeve made of soft elastomeric material and means associated with the suture sleeve for enhancing gripping of a lead body by the suture sleeve, said suture sleeve comprising a tubular sleeve having a throughbore adapted to receive a pacing lead body and two spaced apart outer annular suture receiving grooves each adapted to receive a suture therein to fix said assembly to a pacing lead, said gripping enhancing means being made of a material which is different than the material of the suture sleeve and which is stiff but flexible, and said gripping enhancing means being positioned to extend within and longitudinally of an elongate axis of said suture sleeve in the area of and between said annular grooves thereby to disperse any stress placed upon said suture sleeve when sutures are tied in said annular grooves, and said suture sleeve assembly being radially compressible upon the placement and tying of a suture around said suture sleeve assembly in each annular groove to facilitate generally uniform gripping of the lead body by said suture sleeve assembly along the length of said gripping enhancing means.

4,553,962

MEDICAL SYRINGE

Jean-Louis Brunet, 14, rue Victor Hugo, 69002 Lyon, France

Filed Jan. 16, 1984, Ser. No. 570,772
Claims priority, application France, Jan. 17, 1983, 83 00891
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—198 **2 Claims**



1. A medical syringe comprising:

a barrel having one end adapted to be applied against the skin of a user for injection;

a plunger mounted on an opposite end of said barrel and spring biased so as to be driven toward said one end upon release;

an ampule containing a liquid medicament to be injected beneath the skin of said user, said ampule being slidably received in said barrel and movable toward said one end thereof, said ampule including:

a cylindrical glass body;

a piston received in one end of said body proximal to said plunger and slidable in said body,

a disk fixed in an opposite end of said body proximal to said one end of said barrel, said piston and said disk receiving between them an injection dose of said liquid medicament, said disk having a central thin-walled portion adapted to be perforated and a shoulder extending toward said one end of said barrel of a diameter less than that of said body,

a sleeve fixed on said shoulder of said disk,

a needle support slidably received in said sleeve and having a central boss aligned with said thin-walled portion, and

a hypodermic needle received in said boss and having a sharpened first end juxtaposed with but spaced from said thin-walled portion and a second end reaching toward said one end of said barrel; and

an obturator closing said one end of said barrel and adapted to be pierced by said needle when said ampule is driven toward said one end of said barrel by engagement of said plunger with said piston whereby said first end is then caused to pierce said thin-walled portion so that further displacement of said piston in said body by said plunger drives said medicament beneath the skin of the user.

4,553,963

ROLLER CLAMP CONTROLLER

Harvey T. Young, El Toro, Calif., assignor to American Hospital Supply Corp., Evanston, Ill.

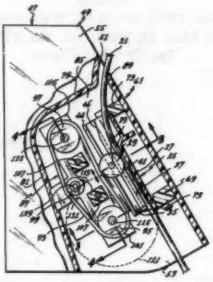
Filed May 16, 1984, Ser. No. 610,681
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—246 **20 Claims**

1. A controller for controlling the flow of fluid through a conduit from a source to a patient wherein the conduit has a flexible wall portion and a roller clamp having a body, a rotary

member which is mounted on the body for rotation and translation, and a ramp receives the flexible wall portion between the rotary member and the ramp and wherein the rotary member is rotatable and translatable to restrict the conduit at said flexible wall portion a selected amount to control the flow of fluid through the conduit, said controller comprising:

a supporting structure;

means for mounting the roller clamp on the supporting structure;



drive means on the supporting structure drivingly engageable with the rotary member of the roller clamp when the roller clamp is mounted on the supporting structure by said mounting means for rotating the rotary member while allowing the rotary member to translate to selectively restrict the conduit at the flexible wall portion; and

motor means for driving the drive means.

4,553,964

INFUSION APPARATUS

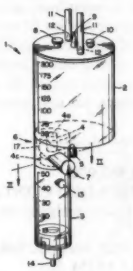
Hideki Sasaki, Hiroshima, Japan, assignor to Japan Medical Supply Co., Ltd., Hiroshima, Japan

Filed Feb. 27, 1984, Ser. No. 584,119

Claims priority, application Japan, Mar. 14, 1983, 58-35532[U]

Int. Cl.⁴ A61M *5/14*

U.S. Cl. 604—248 **12 Claims**



1. An infusion apparatus comprising a first upper burette, a second lower burette and a connector, said burettes communicating in series with each other through said connector, said connector having a first passageway therethrough for establishing communication between said first and second burettes, said connector having a second passageway therein communicating with and adapted to introduce air into said second burette, and directional control valve means positioned across both said first and second passageways and adapted to close said first passageway when said second passageway is opened and to open said first passageway when said second passageway is closed.

4,553,965

FLUID-EXPANSIBLE CONTRACEPTIVE TAMPON AND APPLICATOR

Shepard Conn, 27 Washington Pl., Metuchen, N.J. 08840, and Arnold Kushner, 110-27 Jewel Ave., Forest Hills, Queens, N.Y. 11375

Continuation of Ser. No. 516,665, Jul. 25, 1983, abandoned, which is a continuation of Ser. No. 208,011, Nov. 18, 1980, abandoned, which is a division of Ser. No. 906,984, May 17, 1978, Pat. No. 4,271,835. This application Jul. 6, 1984, Ser. No. 626,607

Int. Cl.⁴ A61F *13/20*

U.S. Cl. 604—286 **7 Claims**

1. As a new use for a known material, the method of using a body of purposefully compressed, compression self-retentive, hydrophilic, fluid expansible material having a high coefficient of expansion and the capability of becoming resilient upon wetting as a barrier contraceptive by wetting said body with a spermicide and inserting said body intravaginally to act as a barrier to the os uteri and to fill the fornices of the upper vault of the vagina, including the steps of storing said body in a container adjacent the stored body of said spermicide and releasing said spermicide upon command to moisten said body prior to intravaginal insertion, wherein the body is shaped during compression from two discs of said material into a pair of folded umbrella configurations each having its apex pointed in the same direction, and joining said two discs; and inserting said compressed folded umbrella configuration into said container.

4,553,966

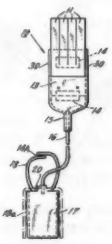
DEVICE FOR DRAINING BODY FLUIDS AND IRRIGATING SOLUTIONS

Wayne Korteweg, Ledyard, Conn., assignor to Americal Corporation, Mystic, Conn.

Filed Sep. 19, 1983, Ser. No. 533,222

Int. Cl.⁴ A61M *1/00*

U.S. Cl. 604—317 **9 Claims**

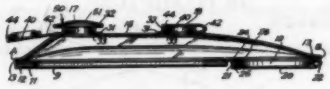


1. A fluid collection and disposal system for utilization in connection with the drawing off of fluids during medical procedures or operations comprising a wicking material having a high capillary absorption capacity capable of being saturated to become a siphoning material when a portion thereof passes the edge of an area from which fluid is to be drawn; and means connected to said wicking material to receive said fluid; the wick material being separated into a plurality of sections or fingers which may be spread over the site of the procedure which is being performed.

4,553,967
WOUND CARE AND DRAINAGE SYSTEM HAVING HAND ACCESS PORT

Keith Ferguson, Scotch Plains, N.J., and Nancy McClees, Worthington, Ohio, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 14, 1983, Ser. No. 541,823
Int. Cl.[4] A61M *1/00*
U.S. Cl. 604—317 18 Claims

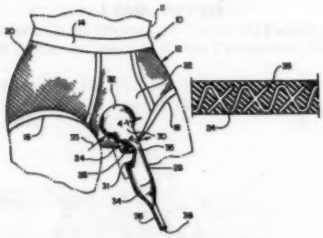


1. A wound care and drainage system comprising a pouch having a bottom wall, top wall, and gusseted side walls, said pouch walls formed from a transparent, moisture proof, odor proof, polymeric film material, a portion of said pouch bottom wall secured to an adhesive layer with the remainder of said pouch bottom wall extending beyond said adhesive layer, said adhesive layer having a thin film of water insoluble polymeric film secured to one surface and said bottom pouch wall secured to said thin polymeric film, bottom wall aperture means in said extended pouch bottom wall that functions as an exit port for material being drained from the wound, the diameter of said bottom wall aperture means of sufficient size so that a hand can be inserted through said bottom wall aperture means into said pouch to aid in locating said pouch on the body and to permit access to the wound area without removing said pouch from the body, and securing means encircling said bottom wall aperture means whereby a cap can be detachably secured to seal said bottom wall aperture means.

4,553,968
EXTERNAL MALE URINARY CATHETER WITH GARMENT

Glenna Komis, P.O. Box 54033, Philadelphia, Pa. 19105

Filed Jun. 9, 1983, Ser. No. 492,145
Int. Cl.[4] A61F *5/44*
U.S. Cl. 604—349 7 Claims

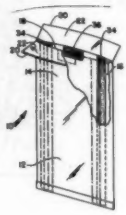


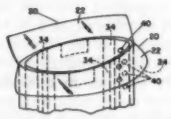
1. An external male urinary catheter assembly comprising a thin, flexible, resilient tubular catheter dimensioned to be positioned in enclosing relation to a substantial portion of the penis, said catheter including a reinforced end portion forming a contoured, open-ended tubular member, drainage tubing communicating at one end with said tubular member and extending to a connection element, said element being in fluid communication with a collection receptacle having means for attachment either to the ambulatory wearer at his calf or to the bedside of the bedridden wearer; said catheter being smoothly and completely united among essential structures, the end of said catheter opposite to said reinforced end portion forming a circular flange; and a supporting garment of the men's brief type, said garment composed of strands of an absorbent material and having a complementary annular outwardly projecting tubular portion on the front thereof, said flanged end portion comprising a vulcanized rubber material engaging said annular portion and integrally united thereto, the rubber material of said flanged end portion being embedded within said strands so as to provide a continuous smooth meshing of the strands of absorbent material and the rubber material.

4,553,969
DISPOSABLE RELIEF CONTAINER WITH SECURAL LINER

Frances H. Taylor, 218-B South St., Eatontown, N.J. 07724

Filed Mar. 14, 1983, Ser. No. 475,220
Int. Cl.[4] A61F *5/44*
U.S. Cl. 604—355 5 Claims





1. A disposable relief container for the collection and disposal of fecal material from the natural excremental passageway of a human body, which comprises:

a gas permeable, fluid impermeable, flexible outer container having an opening and formed with flange members having a bacteria-free adhesive coated thereon for attachment to said human body about said natural excremental passageway; and

a flexible, fluid tight inner container having an opening, said inner container positioned in and mounted to said outer container by means of longitudinal and lateral adhesive strips secured to an interior surface of said outer container whereby said opening of said inner container is coincidental with said opening of said outer container, said inner container provided with vent means for gaseous communication to the atmosphere via said inner and outer containers.

4,553,970
COLLAPSIBLE MOLDED CONTAINER

Dan Lewis, Jr., Lafayette, Calif., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Dec. 28, 1983, Ser. No. 566,253
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—408 6 Claims

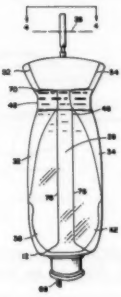
1. In a molded collapsible medical solution container of the type intended for delivery of a sterile solution without the introduction of extrernal air, the improvement which comprises:

(a) a neck portion comprising means for emptying said solution from said container,

(b) a shoulder portion surrounding said neck portion and having a length and a width,

(c) a pair of opposed, collapsing sidewall portions extending along the length of said shoulder portion and in a generally convergent direction from the shoulder portion to a base portion,

(d) a pair of opposed, generally parallel, substantially planar minor sidewall portions extending in width between and continuous with said collapsing sidewall portions and having a slight outward bowing across their width in response to collapse of the sidewall portions for preventing, adjacent thereto, mutual and total contact between said collapsing



sidewall portions, and for assuring two columnar openings adjacent the minor sidewalls during container collapse, and

(e) a rigidifying waist portion extending circumferentially around said collapsing sidewall and minor portions in an area closer to the base portion than the shoulder position for maintaining a generally rectangular configuration during container collapse.

4,553,971

POUCH-LIKE BAGS FOR CONTAINING LIQUIDS

Ashley, Robert J., Faringdon; Bardhan, Nabendu, Abingdon; Peter D. Hardy, Wantage, and Keith D. Jeffs, Malmesbury, all of England, assignors to Metal Box p.l.c., Reading, England

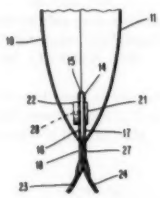
PCT No. PCT/GB83/00086, § 371 Date Nov. 22, 1983, § 102(e) Date Nov. 22, 1983, PCT Pub. No. WO83/03351, PCT Pub. Date Oct. 13, 1983

PCT Filed Mar. 23, 1983, Ser. No. 568,200

Claims priority, application United Kingdom, Mar. 24, 1982, 8208683

Int. Cl.[4] A61F *7/00*

U.S. Cl. 604—415 **10 Claims**



1. A pouch-like bag for containing a liquid for medical or surgical use, the bag having two walls formed by respective plies of flexible plastics material sealed together around at least their top and side edges and one or more additional, folded plies of flexible plastics material disposed between the walls of the bag to form a gusset fold having opposed leaves sealed to the adjacent walls of the bag and which carries one or more elements for receiving a needle for making connection with the bag contents and which is closed to form a sealed compartment protecting the or each element which it carries from contamination, characterised in that said one or more additional, folded plies being substantially smaller than the walls of the bag, so that when the sealed compartment is opened said one or more folded plies form a substantially flat bottom portion of the bag extending substantially perpendicular to the walls of the bag and presenting the element or elements for insertion of a needle or needles in a direction substantially parallel to the walls of the bag so as to avoid risk of accidental penetration of the walls.

4,553,972

DISPOSABLE INTRAVAGINAL CONTRACEPTIVE DEVICES RELEASING 1-SUBSTITUTED IMIDAZOLES

Brian H. Vickery, Cupertino, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed May 20, 1983, Ser. No. 496,729

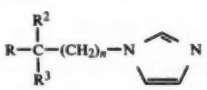
Int. Cl.[4] A61M *31/00*

U.S. Cl. 604—892 **15 Claims**

1. A contraceptive device which releases spermicide and a pharmaceutically acceptable chelating agent during intravaginal placement in a female mammal comprising

(a) an inert, flexible polymeric material formed into a configuration suitable for vaginal insertion and long term retention in the vagina and permeable to the release of said spermicide and a pharmaceutically acceptable chelating agent;

(b) an effective amount of a 1-substituted imidazole spermicide or the pharmaceutically acceptable acid addition salts thereof, included within the matrix of said polymeric material, the imidazole having the formula



(I)

wherein:

(i)

R is alkyl of one to twelve carbon atoms, phenyl or phenyl-lower-alkyl of one to four carbon atoms wherein the phenyl ring is optionally substituted by one or more lower alkyl of one to four carbon atoms, lower alkoxy of one to four carbon atoms, halo or trifluoromethyl;

R^2 together with R^3 is ethylenedithio or propylenedithio wherein the alkylene chain is optionally substituted by one lower alkyl of one to four carbon atoms; and

n is 1, 2 or 3;

(ii)

R is cycloalkyl of five to seven carbon atoms or cycloalkylalkyl of six to ten carbon atoms;

R^2 is hydrogen or lower alkyl of one to four carbon atoms;

R^3 is alkyl of two to twelve carbon atoms, cycloalkyl of five to seven carbon atoms or cycloalkylalkyl of six to ten carbon atoms; and

n is 1, 2 or 3;

(iii)

R is phenyl or phenyl-lower-alkyl of one to three carbon atoms wherein the phenyl ring is optionally substituted by one or more lower alkyl of one to four

carbon atoms, lower alkoxy of one to four carbon atoms, halo or trifluoromethyl;

R^2 is hydrogen or lower alkyl of one to four carbon atoms;

R^3 is alkyl of one to twelve carbon atoms, phenyl-lower-alkyl of one to three carbon atoms wherein the phenyl ring is optionally substituted by one or more lower alkyl of one to four carbon atoms, lower alkoxy of one to four carbon atoms, halo, or trifluoromethyl; and

n is 1, 2 or 3;

(iv)

R is alkyl of one to twelve carbon atoms;

R^2 is hydrogen or lower alkyl of one to four carbon atoms;

R^3 is hydrogen or alkyl of one to twelve carbon atoms; and

n is 1, 2, 3 or 4; or

(v)

R and R^4 are each alkyl of one to twelve carbon atoms, alkenyl of two to twelve carbon atoms, phenyl, phenyl-lower-alkyl of one to four carbon atoms or phenyl-lower-alkyl of two to four carbon atoms wherein the phenyl ring is optionally substituted by one or more lower alkyl of one to four carbon atoms, lower alkoxy of one to four carbon atoms, halo, or trifluoromethyl;

R^2 is hydrogen or lower alkyl of one to four carbon atoms;

R^3 and X-R^4 wherein X is oxygen or sulfur; and

n is 1, 2 or 3; and

(c) an effective amount of a pharmaceutically acceptable chelating agent.

4,553,973

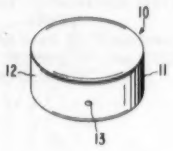
PROCESS FOR PREPARING OSMOTIC DEVICE

David Edgren, El Granada, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 397,517, Jul. 12, 1982, Pat. No. 4,519,801. This application Feb. 1, 1985, Ser. No. 697,598

Int. Cl.[4] A61K *9/22*

U.S. Cl. 604—892 **5 Claims**



1. A process for making an osmotic delivery system for delivering a beneficial drug to an environment of use, said process comprising:

(a) compressing a drug formulation into a solid mass of drug;

(b) coating the solid mass of drug with a wall-forming composition comprising (1) ethyl cellulose (2) a polyhydroxy polymer member selected from the group consisting of hydroxypropyl cellulose, hydroxypropyl methylcellulose, and hydroxyethyl cellulose, and (3) a carboxypolymer selected from the group consisting of carboxypolymethylene, poly(methylvinylether maleic anhydride), ethylene-acrylic acid copolymer, ethylene maleic acid anhydride copolymer, and methacrylic acid-ethylacrylic acid copolymer;

(c) reacting the polyhydroxy polymer and the carboxypolymer by heating the coated solid mass of drug to a temperature sufficient to cause the polyhydroxy polymer and the carboxypolymer to react and from with the ethyl cellulose a wall surrounding the solid mass of drug;

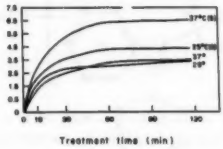
(d) cooling the wall surrounded solid mass of drug to room temperature; and,

(e) drilling a passageway through the wall for delivering the drug formulation from the delivery system.

4,553,974
TREATMENT OF COLLAGENOUS TISSUE WITH GLUTARALDEHYDE AND AMINODIPHOSPHONATE CALCIFICATION INHIBITOR

Mrinal K. Dewanjee, Rochester, N. Mex., assignor to Mayo Foundation, Rochester, Minn.

Filed Aug. 14, 1984, Ser. No. 640,725
Int. Cl.[4] A63B *51/02*
U.S. Cl. 8—94.11 **38 Claims**



1. A process for the treatment of collagenous tissue to adapt it for use in a prosthetic implant and to promote the growth of endothelial cells thereon after implantation, which comprises the steps of:

(a) contacting said tissue with at least one surfactant for a time sufficient to substantially completely remove deleterious material and open up the fibrous structure of the collagenous tissue;

(b) washing the resulting fibrous matrix to remove substantially all surfactant;

(c) fixing the washed tissue with glutaraldehyde;

(d) treating the glutaraldehyde-fixed tissue with a calcification-inhibiting agent, an agent which inhibits infiltration and attack by phagocytic cells upon implantation and/or an agent which inhibits infection; and

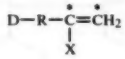
(e) treating the resulting agent/matrix tissue with a reducing agent to stabilize the bonding of the glutaraldehyde of step (c) and the agent of step (d) to the tissue.

4,553,975
TINTED CONTACT LENSES AND A METHOD FOR THEIR PREPARATION

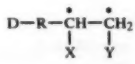
Kai C. Su, Roswell, Ga., assignor to Ciba Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 382,973, Jun. 1, 1982, Pat. No. 4,468,229, which is a continuation-in-part of Ser. No. 292,325, Aug. 12, 1981, abandoned. This application Feb. 15, 1984, Ser. No. 580,398
The portion of the term of this patent subsequent to Aug. 28, 2001, has been disclaimed.
Int. Cl.[4] D06P *5/00*
U.S. Cl. 8—507 **14 Claims**

1. A contact lens colored over at least a portion of its surface, comprising a copolymeric hydrogel material to which at least one reactive dyestuff of the formula



or



wherein

D is the radical of an organic dyestuff radical;

R is a divalent organic electron attracting group capable of causing electron withdrawal of the C carbon atoms, thus activating the same;

X is hydrogen or halo; and

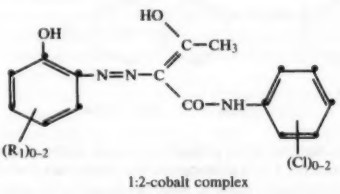
Y is leaving group; or mixtures thereof, is covalently bonded external to the polymer backbone by reaction at temperatures up to 60° C. with hydroxyl, amino, amido or mercapto groups present in said polymer, over the colored portion of the lens.

4,553,976
PROCESS FOR DYEING OR PRINTING POLYAMIDE FIBRES

Helmut Raisin, Riehen, and Bernard C. Teutelink, Birsfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

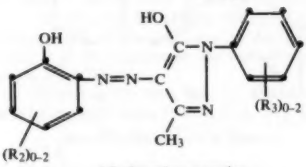
Continuation-in-part of Ser. No. 470,493, Feb. 28, 1983, abandoned. This application Jan. 12, 1984, Ser. No. 570,255
Claims priority, application Switzerland, Jan. 13, 1983, 176/83
Int. Cl.[4] C09B *1/34*; D06P *3/14, 5/20*
U.S. Cl. 8—639 **14 Claims**

1. A process for dyeing or printing synthetic polyamide fibres by a rapid fixation method, which process comprises dyeing or printing synthetic polyamide fibers with a dye or a mixture of dyes selected from the dyes of the formulae



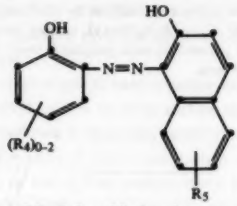
1:2-cobalt complex

wherein $(R_1)_{0-2}$ represents 0 to 2 substituents R_1 which may each independently be C_1–C_4alkyl, C_1–C_4alkoxy, halogen, nitro, sulfamoyl, N—C_1–C_4alkylsulfamoyl, N—C_1–C_2alkoxy-C_1–C_2alkylsulfamoyl, phenylaminosulfonyl, carboxyphenylamoinosulfonyl, C_1–C_4alkylsulfonyl or acetylamino;



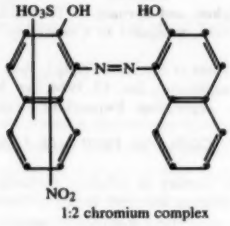
1:2-chromium complex

wherein $(R_2)_{0-2}$ represents 0 to 2 substituents R_2 which may each independently be C_1–C_4alkyl, C_1–C_4alkoxy, halogen, nitro, sulfamoyl, N—C_1–C_4alkylsulfamoyl, N—C_1–C_2alkoxy-C_1–C_3alkylsulfamoyl, phenylaminosulfonyl, carboxyphenylaminosulfonyl, C_1–C_4alkylsulfonyl or acetylamino, and $(R_3)_{0-2}$ represents 0 to 2 substituents R_3 which may each independently be halogen, C_1–C_4alkyl, cyano or sulfamoyl; 1:2 cobalt complex of the dyes of the formula (2), wherein R_2 has the same meaning as in the 1:2 chromium complexes and $(R_3)_{0-2}$ represents 0 to 2 substituents R_3 which may each independently be halogen, cyano or sulfamoyl;

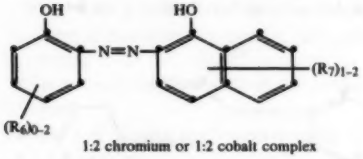

(3)

1:2-cobalt or 1:2 chromium complex

wherein R_4 has the same meaning as R_1 in formula (1), and R_5 is hydrogen, acetylamino, methoxycarbonylamino or methylsulfonylamino;

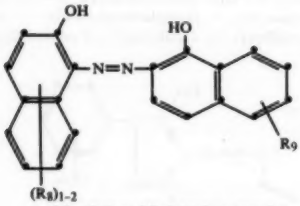

(4)

1:2 chromium complex


(5)

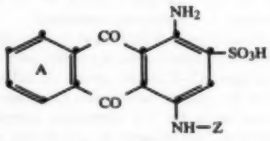
1:2 chromium or 1:2 cobalt complex

wherein R_6 has the same meaning as R_1 in formula (1), and $(R_7)_{1-2}$ represents 1 to 2 substituents R_7 which may each independently be halogen, methyl, methoxy or sulfo, or wherein 2 adjacent substituents R_7 are able to form a closed bridge member $-SO_2-CH_2-O-$;

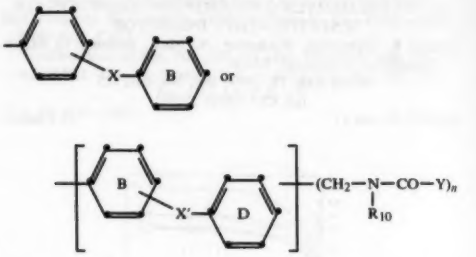

(6)

1:2 cobalt or 1:2 chromium complex

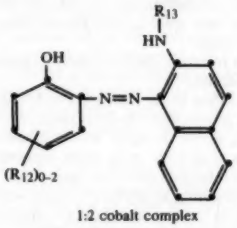
wherein $(R_8)_{1-2}$ represents 1 to 2 substituents R_8 which may each independently be sulfo or nitro and R_9 is hydrogen or hydroxy;


(7)

wherein Z is the radical of the formula

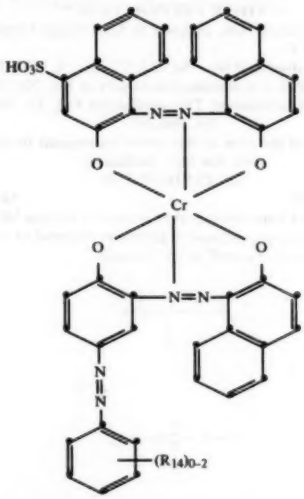


wherein X is the $-O-SO_2-$, $-NH-SO_2$ or $-NH-CO-$ group and X' is oxygen or sulfur, R_{10} is hydrogen or C_1–C_4alkyl, Y is an unsubstituted or substituted aryl radical, n is 1, 2 or 3, the benzene ring A may be substituted by halogen and the benzene rings B and D may each independently be substituted by halogen, C_1–C_4alkyl, C_1–C_4alkoxy or by a radical of the formula $-O-CH_2CH_2-O-R_{11}$, wherein R_{11} is hydrogen, methyl or ethyl;

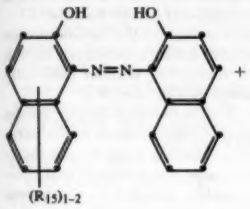

(8)

1:2 cobalt complex

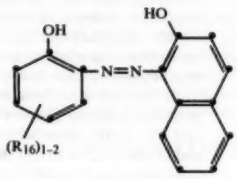
wherein R_{12} has the same meaning as R_1 in formula (1), and R_{13} is hydrogen or phenyl;


(9)

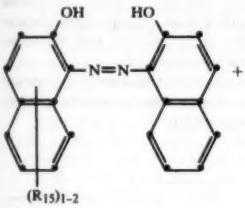
wherein $(R_{14})_{0-2}$ represents 0 to 2 substituents R_{14}, which may each independently be C_1–C_4alkyl, C_1–C_4alkoxy, halogen, carboxy or sulfo; and a mixture of the 1:2-chromium complexes of formula (10), (10a) and (10b)

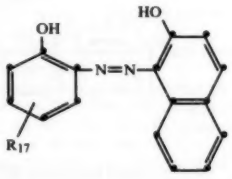


(10)

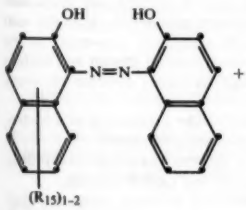


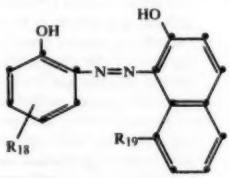
(10a)





(10b)





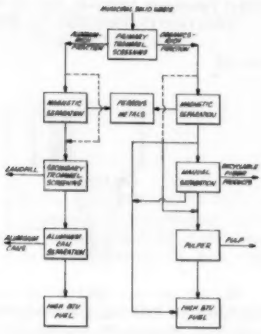
wherein $(R_{15})_{1-2}$ represents 1 to 2 substituents R_{15}, which may each independently be sulfo or nitro, $(R_{16})_{1-2}$ represents 1 to 2 substituents R_{16}, which may each independently be nitro, halogen, methyl or acetylamino, R_{17} has the same meaning as R_{16}, independently thereof, R_{18} has the same meaning as R_{16}, independently thereof, and R_{19} is acetylamino, methoxycarbonylamino, ethoxycarbonylamino, methylsulfonylamino or N,N-dimethylaminosulfonyl; 1:2 cobalt mixed complexes of the dyes of the formulae (2) and (3) or (4) and (8); in a continuous dyeing process or printing method, and fixing the dyeings or prints by steaming for less than 3 minutes, during which time at least 95% fixation of the dyes is achieved.

4,553,977

SOLID WASTE PROCESSING

Thomas H. Fry, 10440 Tuxford, Sun Valley, Calif. 91352

Filed Apr. 19, 1984, Ser. No. 594,567
Int. Cl.[4] B03B *7/00*
U.S. Cl. 44—1 D **17 Claims**



1. A process for a separation of solid waste into recoverable segments, which comprises:

(a) screening the solid waste in a first screening zone to form:

(i) an aluminum-rich underflow comprising substantially-intact aluminum cans, inorganic fines, and combustible organics, and

(ii) an organics-rich overflow comprising recyclable fiber products;

(b) separating the substantially intact aluminum cans from the inorganic fines contained in the aluminum-rich underflow by a second screening operation;

(c) manually separating the substantially-intact aluminum cans from combustible organics; and

(d) isolating at least a portion of the organics-rich overflow for use as a fuel.

4,553,978

PROCESS FOR CONVERTING LIGNEOUS MATTER OF VEGETABLE ORIGIN BY TORREFACTION, AND PRODUCT OBTAINED THEREBY

Schwob Yvan, Paris, France, assignor to Association pour la Recherche et le Developpement des Methodes et Processus Industriels, Paris, France

Filed Aug. 23, 1982, Ser. No. 410,636
Claims priority, application France, Aug. 28, 1981, 81 16463
Int. Cl.[4] C10L *5/00*
U.S. Cl. 44—1 E **15 Claims**

1. A process for converting ligneous matter to a torrefied wood product comprising:

(1) slowing and progressively heating a feed consisting essentially of fragmented ligneous matter in a medium which under the heating conditions is substantially inert to the ligneous matter, and wherein the heating conditions are such that all of the ligneous matter being heated reaches a temperature of at least 200° C. but none of the ligneous matter reaches a temperature which exceeds 280° C.

(2) maintaining the said heating step for a period of 0.5 to 5 hours;

(3) removing pyroligneous gaseous products from the medium during the heating period;

(4) cooling the heated product; and

(5) recovering the resulting torrefied wood product.

13. Torrefied ligneous matter of vegetable origin having a fixed carbon content of between 35 and 40%, a caloric value of at least 5000 kcal/kg A hydroscopicity of less than 3% and not being fermentable.

4,553,979

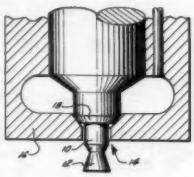
DIESEL FUEL COMPOSITIONS

J. Vincent Hanlon, Baton Rouge, La.; Denis L. Lenane, St. Louis, Mo., and James B. Retzloff, Pinckney, Mich., assignors to Ethyl Petroleum Additives, Inc., St. Louis, Mo.

Filed Oct. 15, 1984, Ser. No. 661,222

Int. Cl.[4] C10L *1/22*

U.S. Cl. 44—57 **16 Claims**



1. Distillate fuel for indirect injection compression ignition engines containing at least the combination of (a) organic nitrate ignition accelerator, and (b) the condensation product of a high molecular weight alkylphenol, an aldehyde and an amine having at least one active hydrogen atom bonded to an amino nitrogen atom, said combination being present in an amount sufficient to minimize coking on the nozzles of indirect injection compression ignition engines operated on such fuel.

4,553,980

ESTER-CONTAINING HALOPOLYALKYLENES

Michael I. Naiman, St. Louis, and John A. Schield, Chesterfield, both of Mo., assignors to Petrolite Corporation, Saint Louis, Mo.

Continuation of Ser. No. 626,830, Jul. 2, 1984, and a continuation-in-part of Ser. No. 432,494, Oct. 4, 1982, abandoned, which is a continuation-in-part of Ser. No. 356,994, Mar. 11, 1982, Pat. No. 4,471,098. This application Apr. 22, 1985, Ser. No. 725,612

Int. Cl.[4] C10L *1/18*

U.S. Cl. 44—62 **1 Claim**

1. A fuel oil containing a linear halogenated polyalkylene characterized as

(a) being essentially free of cross-linking;

(b) having vinyl unsaturation in the polyalkylene backbone; and

(c) having 0.001 to less than 1 percent of the halogen groups replaced by ester groups.

4,553,981

ENHANCED HYDROGEN RECOVERY FROM EFFLUENT GAS STREAMS

Andrija Fuderer, Antwerpen, Belgium, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 7, 1984, Ser. No. 577,802

Int. Cl.[4] C01C *1/04*

U.S. Cl. 48—62 R **42 Claims**

1. An improved process for the production of a hydrogen-containing product gas consisting essentially of:

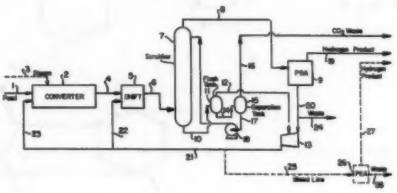
(a) generating an effluent gas stream comprising hydrogen, carbon dioxide, carbon monoxide and water vapor;

(b) upon cooling said effluent stream to about 350° C. -400° C., subjecting said effluent stream to at least a high temperature catalytic water gas shift conversion, thereby converting most of the carbon monoxide in said effluent stream to additional hydrogen and carbon dioxide;

(c) scrubbing at least a major portion of the carbon dioxide from said thus-treated effluent stream to produce a carbon dioxide-depleted effluent stream but without essentially complete removal of carbon dioxide therefrom;

(d) passing the thus carbon dioxide-depleted effluent stream to a pressure swing adsorption system capable of discharging a purified, hydrogen-containing product gas therefrom as a less readily adsorbable component of said effluent stream, the more readily adsorbable component thereof comprising residual carbon dioxide and other impurities present in said effluent stream, said more readily adsorbable component being removed from the pressure swing adsorption system during the countercurrent depressurization and/or purge steps of the processing cycle in each adsorbent bed of said system, said cycle comprising higher pressure adsorption with discharge of said less readily adsorbable component from the product end of the bed, cocurrent depressurization with release of void space gas from the product end of the bed, countercurrent depressurization of the bed to lower desorption pressure and/or purge with release of impurities-containing waste gas from the feed end of the bed, and repressurization to higher adsorption pressure;

(e) compressing said waste gas removed from the pressure swing adsorption system during said countercurrent depressurization and/or purge steps;



(f) recycling at least about 40% of said compressed waste gas to said shift conversion and/or effluent gas generation steps for additional hydrogen production, whereby said effluent gas stream is advantageously converted to the desired hydrogen-containing product stream and carbon dioxide waste gas at high hydrogen product recovery levels.

31. An improved apparatus for the production of a hydrogen-containing product gas consisting essentially of:

(a) means for generating an effluent gas stream comprising hydrogen, carbon monoxide and carbon dioxide;

(b) cooling and high temperature catalytic water gas shift conversion means for converting carbon monoxide in said effluent gas stream to hydrogen and carbon dioxide;

(c) scrubbing means capable of removing at least a major portion of the carbon dioxide from the thus-water gas shifted effluent gas stream, but without essentially complete removal of carbon dioxide therefrom;

(d) a pressure swing adsorption system capable of discharging a purified, hydrogen-containing gas stream and waste gas comprising residual carbon dioxide and other impurities present in said effluent gas stream;

(e) compression means for compressing said waste gas; and

(f) conduit means for recycling at least about 40% of said compressed waste gas to said shift conversion means and/or to said means for generating an effluent gas stream, whereby said effluent gas stream may advantageously be converted to the desired hydrogen-containing product stream and a carbon dioxide waste gas at high hydrogen product recovery levels.

4,553,982

COATED ABRASIVE CONTAINING EPOXY BINDER AND METHOD OF PRODUCING THE SAME

Gerald E. Korbel, Little Canada; Janis Robins, St. Paul, and Harold E. Rude, Roseville, all of Minn., assignors to Minnesota Mining and Manufacturing Co., Saint Paul, Minn.

Continuation-in-part of Ser. No. 616,438, May 31, 1984, Pat. No. 4,503,211. This application Mar. 5, 1985, Ser. No. 708,242

Int. Cl.[4] C09K *3/14*

U.S. Cl. 51—298 **14 Claims**

1. In a coated abrasive product including abrasive granules which are supported on and adherently bonded to at least one major surface of a backing sheet by a make coating of a first resinous binder material and a size coating of a second resinous binder material, the improvement comprising at least one of the said resinous materials being epoxy resin, said epoxy resin characterized by comprising cured epoxy resin and residual curing agent derived from substituted pentafluoroantimonic acid and an aromatic amine selected from the group consisting of aniline and hindered amine.

5. In a method of making coated abrasive products having the steps of

(1) uniformly coating a backing sheet with a make coat of a first resinous material in liquid form;

(2) depositing a plurality of abrasive granules uniformly over the surface of said make coat of first resinous material;

(3) curing said first resinous material to adherently bond said granules to said backing sheet surface;

(4) coating over said make coat and said granules with a size coat of a second resinous material; and

(5) curing the resultant coated product until said second resinous material is solid, the improvement comprising employing, as at least one of said first or said second resinous binder materials, a latent room-temperature stable, curable system comprised of

(A) epoxy resin composition having a 1,2-epoxy equivalency greater than one; and

(B) a curing agent in an amount sufficient to cure said composition on heating comprising

(1) substituted pentafluoroantimonic acid having the general formula $H^+SbF_5X^-$ wherein X is halogen, a hydroxy, or an OR group wherein OR is the residue of an aliphatic or aromatic alcohol; and

(2) an aromatic amine selected from the group consisting of aniline; and hindered amine the mole ratio of said substituted pentafluoroantimonic acid to aromatic amine being in the range of 1:05 to 1:4.

4,553,983

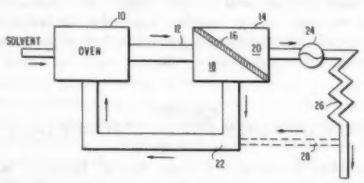
PROCESS FOR RECOVERING ORGANIC VAPORS FROM AIR

Richard W. Baker, Mountain View, Calif., assignor to Membrane Technology and Research, Inc., Menlo Park, Calif.

Filed Jul. 31, 1984, Ser. No. 636,474

Int. Cl.[4] B01D *53/22*

U.S. Cl. 55—16 **16 Claims**



1. A process for recovering and concentrating organic vapor from a feed stream of air having an organic vapor content of no more than 20,000 ppm by volume, comprising:

providing a thin semipermeable membrane having a feed side and a permeate side, a selectivity for organic vapor over air of at least 50, as measured by the ratio of organic vapor permeability to nitrogen permeability, and a permeability of organic vapor of at least 3×10^{-7} cm^3 (STP) cm/cm^2 sec-cm Hg,

passing the feed stream across the feed side of the thin semipermeable membrane while providing a pressure on the permeate side which is lower than the feed side by creating a partial vacuum on the permeate side such that organic vapor passes preferentially through the membrane to form an organic vapor depleted air stream on the feed side and an organic vapor enriched stream on the permeate side, and

compressing and condensing the organic vapor which has passed through the membrane to recover the vapor as a liquid.

4,553,984

REMOVAL OF CO_2 AND/OR H_2S FROM GASES

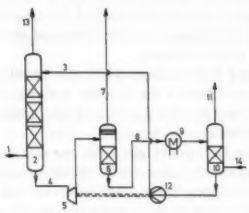
Klaus Volkamer, Frankenthal; Eckhart Wagner, Ludwigshafen, and Ulrich Wagner, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 6, 1984, Ser. No. 586,720

The portion of the term of this patent subsequent to Nov. 5, 2002, has been disclaimed.

Int. Cl.[4] B01D *47/00*

U.S. Cl. 55—46 **1 Claim**



1. A process for removing CO_2 and/or H_2S from a gas containing CO_2 and/or H_2S, which comprises:

(a) treating said gas in an absorption stage at from 40°to 100°C. and at a pressure of from 10 to 110 bar with an aqueous absorption liquid containing from 20 to 70% by weight of methyldiethanolamine by feeding in the gas at the bottom and the aqueous absorption liquid at the top of the absorption stage, CO_2 and/or H_2S being washed out by a countercurrent procedure;

(b) taking off the treated gas at the top of the absorption stage;

(c) taking off the aqueous absorption liquid laden with CO_2 and/or H_2S at the bottom of the absorption stage;

(d) regenerating the laden aqueous absorption liquid by flashing it in one or more flash stages, operating the last stage, or the single flash stage where only one such stage is employed, under a pressure of from about 1 to 3 bar or under reduced pressure, the flash gases being taken off at the top of the flash stage or flash stages;

(e) compensating the losses of water as a result of water present in the gas streams taken off at the top of the absorption stage and of the flash stage or flash stages by feeding in, at the bottom of the last flash stage or, where only one flash stage is used, at the bottom of this flash stage, an amount of steam substantially corresponding to the water loss and

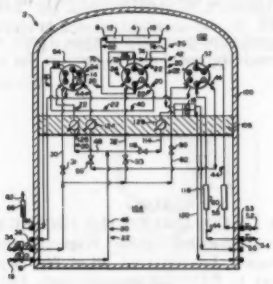
(f) recycling the regenerated absorption liquid to the absorption stage.

4,553,985

GAS CHROMATOGRAPHY

Robert W. Dahlgren, and William H. Dennis, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 24, 1984, Ser. No. 583,469
Int. Cl.[4] B01D *15/08*; G01N *31/08*
U.S. Cl. 55—67 22 Claims



1. A process comprising:
(a) introducing a gaseous sample comprised of a number of components into a first end of a chromatographic separation column having a first end and a second end;
(b) flowing a carrier gas toward the second end of the column to distribute the components of the sample along the length of the column;
(c) eluting a first fraction of the number of components from the second end of the column with the carrier gas;
(d) conveying the first fraction of the number of components to a detector;
(e) flowing the carrier gas from the second end toward the first end of the column to establish a nonlinear flow velocity profile along the column such that gas velocity is faster at the first end of the column that at the second end of the column;
(f) eluting a second fraction of the number of components from the first end of the column; and
(g) conveying the second fraction of the number of components to the detector.

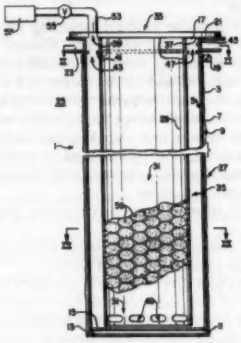
16. Apparatus comprising:
(a) a column suitable for use in high pressure gas chrmatography comprising a first section packed with a supported methyl silicon liquid and a second section packed with a crosslinked polymer of styrene and divinyl benzene, said column having a first end and a second end;
(b) a sample chamber having a predetermined volume;
(c) a detector;
(d) means for connecting a source of carrier gas;
(e) first means for establishing a flow path from the means for connecting the source of carrier gas to the sample chamber, through the sample chamber and to the first end of the column, through the column from first end to second end and to the detector;
(f) second means for establishing a flow path from the means for connecting the source of carrier gas to the second end of the column, through the column from second end to first end, and to the detector; and
(g) means for selectively connecting one of the first means for establishing a flow path and the second means for establishing a flow path and selectively disconnecting the other.

4,553,986

FILTERING SYSTEM AND METHOD OF USING SAME

David F. Ciliberti, Murrysville Boro, and Thomas E. Lippert, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 13, 1984, Ser. No. 670,790
Int. Cl.[4] B01D *53/14*
U.S. Cl. 55—68 9 Claims



1. In a filter system having a ceramic bag filter supported about a hollow mandrel, said mandrel having perforations therethrough, such that a particulate-containing gaseous medium to be filtered is passed through the bag into the mandrel, at a flow rate above a predetermined minimum flow rate, to deposite particulate matter on the exterior of said bag, and filtered gas is discharged from an open end of the mandrel, the improvement comprising:
a hollow tubular member coaxially supported within said mandrel, said tubualar member having impervious walls within the mandrel and an open end adjacent the open end of said mandrel to form a chamber thereabout between said tubular member and the perforated wall of the mandrel;
means for sealing said chamber adjacent the open end of said mandrel comprising a flange extending between said tubular member and said mandrel,
a port in said means for sealing said chamber, for injection of a jet pulse of fluid into said chamber;
a distributor plate having a plurality of spaced apertures disposed across said chamber adjacent to and immediately below said means for sealing said chamber; and
a plurality of slots in the impervious wall of said hollow tubular member equally spaced about said tubular member adjacent the end thereof opposite said open end such that filtered gas, after passage through the perforations of the mandrel are directed through said slots into the hollow tubular member and are discharged from the open end thereof, said tubular member being of a size and said slots being of a size arranged to provide a flow of gases through said mandrel at said flow rate.

4,553,987

CONTINUOUSLY RINSED ELECTRIC DUST COLLECTOR

Arvi Artama, Tampere, and Uuno Nurmi, Helsinki, both of Finland, assignors to Lastro Ky, Ylojarvi, Finland

Continuation-in-part of Ser. No. 359,720, Mar. 11, 1982, abandoned. This application Jan. 12, 1984, Ser. No. 571,658
Int. Cl.[4] B03C *3/16*, *3/53*
U.S. Cl. 55—118 3 Claims

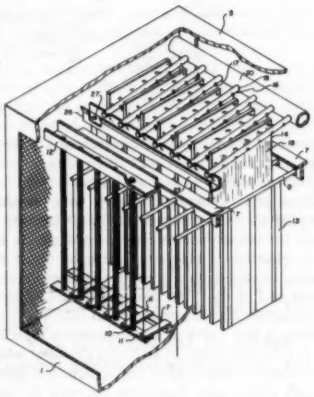
1. In an electric dust collector having a case defining a chamber through which a gas to be cleaned flows by a means

of a fan, precipitator apparatus disposed within said case for removing solid particles from said gas comprising:

ionization means for providing a charge on said particles upstream of an electrostatic field, said ionization means including ionization electrodes and counter-electrodes and means for electrically connecting said ionization electrodes to a voltage supply having a polarity the same as that of said charged particles and said counter-electrodes to ground having a polarity opposite to that of said charged particles;

field means for forming said electrostatic field, said field means including field electrodes and collector electrodes, said collector electrodes comprising continuous films of electrically conductive water flowing over opposite sides of at least one plate having an upper edge and substantially vertical surfaces on said opposite sides;

means for electrically connecting said field electrodes to said voltage supply having a polarity the same as that of said charged particles;



distribution means for causing said films of electrically conductive water to flow over said side surfaces, said distribution means including a water pipe in spaced relation to each side of said at least one plate and extending in the direction of said upper edge and having apertures arranged to direct water currents in the form of sprays toward said side surfaces adjacent to said upper edge, said at least one plate consisting essentially of electrically insulating glass having wetting properties causing said water currents to spread evenly over said side surfaces so as to form said continuous water films and having electrically insulating properties such that said charged particles are not attracted to said at least one plate, and said distribution means comprising electrically conductive parts for causing electricity to be conducted to said water films; and,

means for electrically connecting said conductive parts to ground having a polarity opposite to that of said charged particles so that said charged particles accumulate in said water films and are removed from the gas to be cleaned.

4,553,988

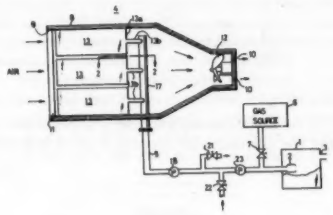
HIGH-TEMPERATURE FURNACE HAVING SELECTIVELY PERMEABLE MEMBRANES FOR OXYGEN ENRICHMENT

Shoji Shimizu, Mukou; Shirow Asakawa, Zama; Yukihiro Saito, Kawasaki, and Yoshimasa Ito, Machida, all of Japan, assignors to Matsushita Electric Industrial Company, Limited and Osaka Gas Co., Ltd., both of Osaka, Japan

Filed Nov. 22, 1982, Ser. No. 443,685

Int. Cl.⁴ B01D *13/00*

U.S. Cl. 55—158 **17 Claims**



1. A high-temperature furnace comprising:

a combustion chamber having a burner for burning a mixture of air and fuel therein and an exhaust outlet for exhausting emissions therefrom to the outside;

a plurality of longitudinally extending, transversely spaced cells to form air passageways therebetween, each of said cells comprising a pair of transversely spaced-apart oxygen permeable membranes for selectively passing oxygen molecules from air in said air passageways to said cells so that the gaseous mixture in said cells is oxygen-enriched air, said air passageways having upstream ends and downstream ends;

conduit means connected from downstream ends of said cells to said burner;

first means for forcibly generating airstreams in said air passageways in a direction from said upstream ends to said downstream ends;

second means in said conduit means for generating a negative pressure in said cells with respect to said air passageways to cause said oxygen-enriched air to flow forcibly to said burner; and

pressure increasing means connected in said conduit means between said second means and said burner for increasing the pressure of oxygen-enriched air delivered to said burner.

4,553,989

SAFETY SYSTEM FOR REMOVING ANY RISK OF CARRYING LIQUIDS TO THE NOSE OF THE FLARE OR TO THE VENT-HOLE DURING BURNING OR DISPERSION OF THE GASES ASSOCIATED WITH PRODUCTION

Gérard Chaudot, 14 Allée de la Rochefoucauld, Andresy 78570, France

PCT No. PCT/FR83/00050, § 371 Date Nov. 14, 1983, § 102(e) Date Nov. 14, 1983, PCT Pub. No. WO83/03280, PCT Pub. Date Sep. 29, 1983

PCT Filed Mar. 11, 1983, Ser. No. 563,388

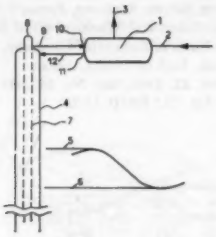
Claims priority, application France, Mar. 12, 1982, 82 04246

Int. Cl.⁴ B01D *19/00*

U.S. Cl. 55—177 **17 Claims**

1. An improved safety system for preventing the accidental burning of liquids that might become entrained in a hydrocarbon gas stream during burning or dispersion of gases associated with the production or treatment of hydrocarbons, this system comprising, in a gas flow chain, between a liquid entrainment source and a nose of a flare tip, at least one tank (1) having at least one overflow column (4) opening below a liquid level

(5,6), at a predetermined distance from a tapping point (11) to said tank, the improvement comprising: means (7,13,14) for avoiding, in the case of liquid overflowing into the overflow



column (4), the retention and trapping of gases in the overflow column (4), the retention and trapping of gases in the overflow liquid.

4,553,990

DEVICE FOR SEPARATING GASEOUS AND LIQUID COMPONENTS FROM A FOAMY GAS LIQUID MIXTURE

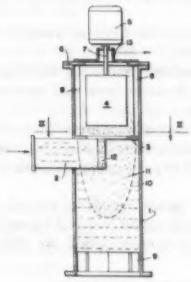
Albert Hoffman, Wolfratshausen, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Hollriegelskreuth, Fed. Rep. of Germany

Filed May 10, 1984, Ser. No. 608,963

Claims priority, application Fed. Rep. of Germany, May 11, 1983, 3317260

Int. Cl.⁴ B01D *19/02*

U.S. Cl. 55—178 **7 Claims**



1. Device for separating gaseous and liquid components of a foamy gas liquid mixture formed in a fermentation process in a container into which a feed line for the gas liquid mixture and withdrawal lines terminate, and into whose top portion there is arranged a turbine, characterized in that the container portion below the turbine is a centrifugal separator into which the feed line terminates as a tangential inlet, and characterized in that above the orifice of the feed line, and below the turbine, there is arranged a collar extending into the inner container chamber, along the container inside wall, the collar being arranged directly above the orifice and is arranged essentially horizontally, further characterized in that the rotational axis of the turbine is essentially vertically disposed and that in the area above the orifice there is a wiper, and preferably a minimum of two wipers, arranged at the container inner wall, whereby the wiper or wipers extend into the container inner wall in the direction towards the rotational axis of the turbine, and essentially run parallel to the rotational axis, further characterized in that in the area of the container outlet for the liquid portion, there is a drag brake.

4,553,991

CENTRALIZED SUCTION CLEANING INSTALLATIONS

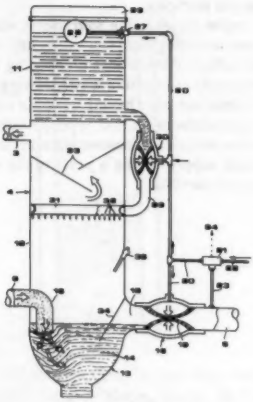
Gabriel Barsacq, Biarritz, France, assignor to S.A.R.L. Aspiramatic, Anglet, France

Filed Jun. 4, 1984, Ser. No. 617,277

Claims priority, application France, Jun. 9, 1983, 83 09710

Int. Cl.⁴ B01D *47/02*

U.S. Cl. 55—218 **5 Claims**



1. Centralized suction cleaning installation comprising suction generating means, a network of fixed pipes connected to said suction generating means, air intakes to which said pipes are connected and which are adapted to have portable cleaning tools coupled to them, means for removing dust from air drawn into the installation, means for evacuating said dust, a closed first chamber, a pipe connecting an upper end of said first chamber to said suction generating means, means connecting a lower end of said first chamber to said fixed pipe network, an evacuation pipe connected to said lower end of said first chamber, a first valve in said evacuation pipe, a first storage tank in said lower end of said first chamber adapted to be filled with water to the level of said evacuation pipe, a bubble arm through which said fixed pipe network is connected to said first chamber and which terminates below the level of said evacuation pipe in said first storage tank, a second water storage tank, a second chamber containing said second water storage tank, a float valve, a pressurized water supply system connected via said float valve to said second chamber, a second valve through which said second chamber is connected to said first chamber, a three-way solenoid valve in said pressurized water supply system connected to said float valve and said first and second valves, and a control switch connected to said solenoid valve.

4,553,992

SCRUBBER APPARATUS FOR PURIFYING FOUL AIR PRODUCED DURING AN EMBALMING, AN AUTOPSY OR THE LIKE

Jean-Guy Boissinot, 146 rue du Golf, Loretteville, (Quebec), Canada (G2A 1G6), and Pierre Begin, 19 rue Bélair, Apt. 103, Levis, (Quebec), Canada (G6V 6K9)

Filed Oct. 17, 1984, Ser. No. 661,919

Int. Cl.⁴ B01D *39/00*

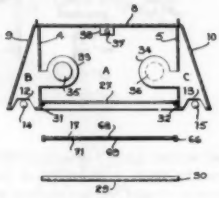
U.S. Cl. 55—279 **19 Claims**

1. An air scrubber apparatus for purifying foul air produced during an embalming, an autopsy or the like carried out on a work table disposed in a room for embalming, autopsy or the like, comprising:

a housing positioned above the work table, said housing defining a first and a second outer compartment disposed

substantially horizontally with respect to each other, said housing also defining a central compartment disposed between said first and second outer compartments, said central compartment being provided with bottom inlet opening means for said foul air, and said first and second outer compartments being each provided with outlets to said room which are located at predetermined positions;

air filter means positioned over said bottom inlet opening means of the central compartment, said filter means comprising a filtering material including aluminium oxide and potassium permanganate and being designed to allow passage of air therethrough, said filtering material which



includes aluminium oxide and potassium permanganate purifying said foul air upon passage thereof through said filter means; and

air pumping means for moving said foul air towards the interior of said central compartment through said filter means for the purpose of purifying said foul air, said pumping means comprising means for transferring the purified air from the central compartment to said first and second outer compartments in order to return the purified air to said room through said outlets, said predetermined positions of said outlets being selected so as to enable a redistribution of the purified air in said room.

4,553,993

MOISTURE ELIMINATOR

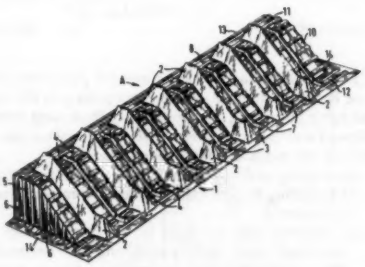
Albert F. Wigley, c/o Visco Ltd., Stafford Rd., Croydon CR9 4DT, England

Filed Feb. 1, 1984, Ser. No. 575,880

Claims priority, application United Kingdom, Feb. 19, 1983, 8304683

Int. Cl.⁴ B01D *45/08*

U.S. Cl. 55—440 **21 Claims**



1. A plate for assembly with similar plates to form at least one duct through which a gaseous stream can be passed to remove liquid droplets from the gaseous stream, the plate being formed from thin sheet material and comprising a first part, a second part and a third part, the first and third parts being disposed in parallel planes, and the second part, which is disposed between the first and third parts, being disposed in a plane which is oblique with respect to the said parallel planes, the plate further comprising a series of parallel mutually spaced ridges which are generally triangular in transverse cross-section, said ridges extending over a major part of the plate and defining the opposite sides of the at least one duct and also forming means for spacing apart adjacent sheets, the reverse sides of the ridges forming depressions which are V-shaped in transverse cross-section, which depressions are formed in their interiors with sharp corners extending longitudinally of the depressions, the ridges being arranged such that each ridge extends into all three parts of the plate, the arrangement being such that on assembly of the plates each said duct is formed with a said depression extending along a substantial part of the length of the duct.

2. Means for removing liquid droplets from a gaseous stream comprising a duct which changes direction at least once along its length, said duct having a transverse cross-sectional shape which is generally trapezoidal, a depression formed in the duct, said depression comprising a pair of mutually inclined walls whereby the depression is generally V-shaped in transverse cross-section, said depression extending longitudinally of the duct over a major part of the length thereof, and a sharp corner extending along the interior of the depression and formed by the junction between the two mutually inclined walls of the depression.

4,553,994

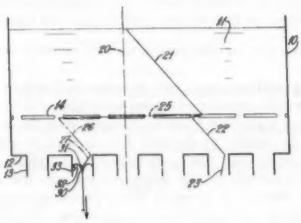
METHOD FOR FORMING GLASS FIBERS

Neil E. Greene, Granville, and Terry J. Hanna, Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 9, 1984, Ser. No. 597,578

Int. Cl.⁴ C03B *37/085*

U.S. Cl. 65—2 **18 Claims**



1. In a method of making glass fibers, the steps of:

(1) forming a body of molten glass in a fiber-forming bushing having a plurality of depending tubular tips each communicating with said body;

(2) regulating the pressure of the molten glass body so that the pool of molten glass immediately above the tips and communicating freely with each tip is at less than atmospheric pressure;

(3) maintaining in each tip a body of glass at a pressure no greater than atmospheric pressure;

(4) attenuating a fiber from the glass body in each tip; and

(5) preventing the issuance of molten glass from any one of said tips should fiberization be interrupted at that tip.

4,553,995

PROCESS FOR PRODUCING IMAGE FIBER

Yoshiki Chigusa, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 28, 1984, Ser. No. 655,643

Claims priority, application Japan, Oct. 3, 1983, 58-183122

Int. Cl.⁴ C03B *23/20*

U.S. Cl. 65—4.2 **9 Claims**

1. A process for producing an image fiber comprising drawing an image fiber preform consisting of a bundle of a plurality of optical fibers each of which is drawn from an optical fiber preform and consists of a core and a cladding, in which at least one of the optical fiber preform, the optical fiber, the image

fiber preform and the image fiber is hydrogenated at a temperature higher than a room temperature in a gas containing hydrogen at a partial pressure of at least 0.05 atmosphere.

4,553,996

PROCESS FOR PRODUCING MINERAL WOOL FIBERS WHILE REDUCING THE VELOCITY OF FLOWING MEDIA

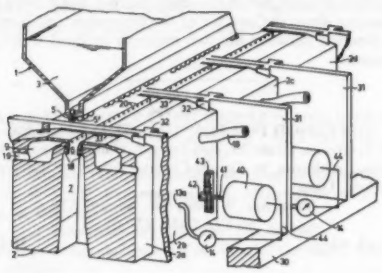
Edgar Muschelknautz, Leverkusen; Norbert Rink, Rommerskirchen, and Georg Chalupka, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 14, 1984, Ser. No. 589,450

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1983, 3309989

Int. Cl.⁴ C03B *37/06*

U.S. Cl. 65—4.4 **7 Claims**



1. In a process for the production of mineral wool fibers, comprising

(a) issuing melt streams from openings in the base of a melting crucible into a converging-diverging drawing nozzle,

(b) flowing a gaseous blasting medium into the nozzle substantially parallel to the melt stream so as to separate the melt stream into fibers, the blasting medium with the fibers dispersed therein being drawn into the nozzle by suction due to a pressure drop produced between the nozzle inlet and outlet the improvement comprising

(c) dividing the flow of dispersion into a plurality of individual streams,

(d) conveying the streams in parallel through a plurality of diffusers connected downstream of the nozzle to reduce the streaming velocity in each diffuser to subsonic speed,

(e) wherein each diffuser is charged with a dispersion mass-flow M meeting the requirement

$$\dot{M} \cdot \frac{q_2}{q_1} < 10 \text{ kg/s},$$

wherein q_2/q_1 is the ratio of the outlet and inlet cross-sections of each diffuser

(f) and successively collecting the decelerated fiber dispersions discharged from the diffuser outlets on a moving web.

4,553,997

PROCESS FOR MELTING GLASS IN A TOROIDAL VORTEX REACTOR

James G. Hnat, 3774 Lewis Rd., Collegeville, Pa. 19426

Filed Mar. 5, 1984, Ser. No. 585,978

Int. Cl.⁴ C03B *5/14*

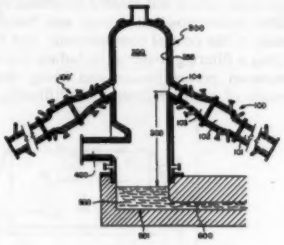
U.S. Cl. 65—27 **23 Claims**

1. A method of melting glass in a toroidal vortex reactor comprising the steps of:

entraining first pulverized glass batch material in an oxidant flow, whereby a first gas-solids suspension is created;

combusting a fuel in the presence of said first gas-solids suspension, whereby said first gas-solids suspension is heated;

mixing second glass forming material with said heated first gas-solids suspension, whereby a second gas-solids suspension is created; and,



injecting said second gas-solids suspension into said toroidal vortex reactor from a plurality of locations about the circumference of said reactor toward a common location within said reactor, whereby the heated second gas-solids suspension particles collide with each other and the wall of said reactor and a glass layer is formed on said reactor walls.

4,553,998

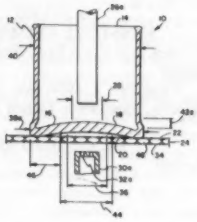
METHOD FOR PRODUCING GLASS CONTAINERS WITH REDUCED STRAIN

William E. Jones, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Filed Jun. 22, 1984, Ser. No. 623,691

Int. Cl.⁴ C03B *25/00*

U.S. Cl. 65—69 **37 Claims**



1. A method for producing molded glass containers of the type having a sidewall, having an opening in the top thereof, and having a bottom that is relatively thick with respect to said sidewall and that includes both an inside surface and an outside surface, the method which comprises:

(a) molding said glass container in a glass molding machine;

(b) removing said molded container from said glass molding machine;

(c) exposing said container to air that is cooler than said container, both said bottom and said sidewall initially being in the annealing range of said glass, whereby said difference in thicknesses results in said bottom remaining at a higher temperature and contracting less than said sidewall, and whereby a plastic strain is produced in a transition portion of said sidewall that is proximal to said bottom; and

(d) cooling a substantially centered portion of said bottom below the temperature of said transition portion, both said bottom and said transition portion intially being in the annealing range of said glass, whereby said bottom contracts because of the thermal coefficient of contraction thereof, whereby said contraction of said bottom creates a

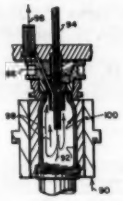
second plastic strain in said transition portion that is opposite in direction to the first said plastic strain, and whereby said second plastic strain effects a reduction in the first said plastic strain.

4,553,999

METHODS AND APPARATUS FOR BLOW MOLDING GLASS ARTICLES

Michael J. Ziegler, Parma Heights, and F. Richard Simpkins, Newbury, both of Ohio, assignors to AGA, A.B., Cleveland, Ohio

Filed Apr. 16, 1984, Ser. No. 600,410
Int. Cl.⁴ C03B *9/36, 9/40*
U.S. Cl. 65—84 **16 Claims**



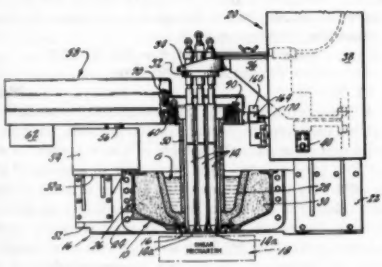
1. In a method of making a hollow glass article by shaping a quantity of molten glass in a mold cavity, the improvement comprising the steps of providing a flow of pressurized cooling gas which has a temperature substantially below that of ambient air, and introducing the flow of cooling gas into the mold cavity interiorally with respect to the hollow glass article being formed in the cavity to directly cool interior surface portions of the molten glass therein and hasten its solidification.

4,554,000

MOLTEN GLASS SPOUT BOWL REFRACTORY TUBE SUPPORT MECHANISM AND METHOD OF CONTROL

John E. Suomala, Wentogue; Kenneth L. Bratton, Windsor, both of Conn.; Sten E. Bergsten, Sundsvall, Sweden; Nicolas M. Savic, Wethersfield, and E. Boyd Gardner, Bloomfield, both of Conn., assignors to Emhart Industries, Inc., Farmington, Conn.

Filed Sep. 27, 1984, Ser. No. 655,502
Int. Cl.⁴ C03B *5/26*
U.S. Cl. 65—129 **29 Claims**



1. In a molten glass spout bowl mounted on fixed structure and defining one or more orifices through which molten glass is adapted to issue, and said spout bowl also including at least one vertically reciprocating plunger, the lower end of which plunger cooperates with the orifice defining means to aid in the flow of glass through such orifices, the improvement comprising at least one refractory tube surrounding the plunger and having an upper end above the spout bowl, said tube having a lower end adapted to mate with an annular seating surface inside the spout bowl to interrupt the flow of glass to the orifice defining means, a horizontally extending frame for supporting said refractory tube, a vertically extending pivot post for said frame, support structure associated with the fixed structure of the glass forehearth and supporting said frame for at least limited horizontal swinging movement on the axis of said pivot post to and from an active position wherein said tube is so supported inside the spout bowl, clamping means defined in part on fixed structure associated with said glass forehearth and in part on said frame to hold said frame in said active position, means for moving said frame down and up relative to said support structure to move the tube lower end toward and away, respectively, from the seating surface defined inside said spout bowl.

29. A method for operating a feeder mechanism of the type having a refractory tube and adapted to issue glass from orifices in the outlet spout of a feeder bowl, said method comprising the steps of

(a) positioning the refractory tube in the bowl at an elevation such that a desired glass flow is attained,

(b) supporting the tube for movement toward and away from the feeder bowl outlet,

(c) moving the tube down until the lower end of the tube seats inside the feeder bowl to stop the flow of glass,

(d) automatically recording the tube position at the start (step a) and after so closing off the glass flow to provide two digital signals,

(e) algebraically adding said digital signals to provide a third digital signal,

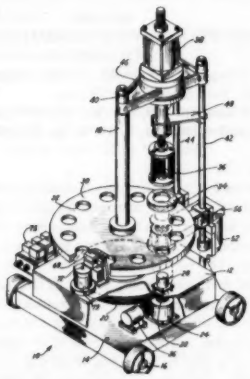
(f) using the added or third digital signal to set up the feeder mechanism during a subsequent period of operation.

4,554,001

VARIABLE INDEX GLASS WARE PRESS WITH COMPUTER CONTROL

Ronald H. Shields, Alexandria; Michael E. Pollen, Fairmonte, both of Ind., assignor to Lynch Machinery, Anderson, Ind.

Filed Sep. 19, 1983, Ser. No. 533,505
Int. Cl.⁴ C03B *11/02, 11/16*
U.S. Cl. 65—160 **8 Claims**



1. A variable index molding press comprising:

a base;

a mold table rotatably mounted on the base, including a plurality of mold positions for locating from one to a plurality of molds thereon;

molding means on the base for cooperating successively with from one to all of the molds on the mold table, at a molding station;

table drive means operatively connected to the mold table for drivably rotating the mold table; and

electronic index control means electrically operatively connected to the table drive means and the molding means for electronically controlling the table drive means and electronically controlling the molding means in synchronism with the table drive means, including a digital computer being programmable for the number, type and spacing of molds on the mold table, and being programmable for mold parameters such as molding time, and a time signal source adapted to generate time representative signals to the computer, the computer controlling and synchronizing the molding means and the table drive means based on the time representative signals, the control means thereby automatically indexing only programmed ones of the mold positions to the molding station for a variety of numbers and spacings of the molds,

whereby only programmed mold positions with molds may be indexed to the molding station, at will.

4,554,002

BENEFICIATING WASTE SLUDGES FOR AGRICULTURAL USE AND PRODUCT MADE THEREBY

John P. Nicholson, Toledo, Ohio, assignor to N-Viro Energy Systems Ltd., Toledo, Ohio

Filed May 16, 1983, Ser. No. 495,143
Int. Cl.[4] C05F *3/00*
U.S. Cl. 71—12 **19 Claims**

1. The method of beneficiating waste water sludge to reduce the pathogens which comprises:

mixing weeds sludge and kiln dust to form a mixture,

the mixture comprising from about 10% to about 30% kiln dust by weight and from about 90% to about 70% waste water sludge by weight,

the amount of kiln dust being sufficient to raise the pH of the mixture to at least 12 and to maintain the pH of the mixture to at least 12 for at least two hours, and

permitting the mixture with a pH of at least 12 to interact for at least two hours.

12. The product made in accordance with the method of claim **1**.

4,554,003

FERTILIZER PROCESSES AND COMPOSITIONS USING S-TRIAZINES

Donald E. Freepons, Kennewick, Wash., assignor to Melamine Chemicals, Inc., Donaldsonville, La.

Division of Ser. No. 305,394, Sep. 25, 1981, abandoned. This application Apr. 8, 1983, Ser. No. 483,383
Int. Cl.[4] C05C *9/00, 11/00*
U.S. Cl. 71—28 **10 Claims**

1. A process for increasing the output of productive units per unit weight of fertilizer nitrogen applied, from a crop that responds to fertilizer nitrogen, comprising inserting and distributing in soil in which said crop is grown, in the root zone of said crop,

a granular fertilizer product that in the soil is a source of nitrogen fertilizer values, the granules being suitable for mechanical dispensing for application to and into the soil, said granules consisting of a mixture comprising:

particles of a material selected from the group consisting of melamine, the mineral acid salts of melamine, and mixtures thereof, said particles having individual particle sizes not above 400 micrometers in largest dimension, in an amount from 10% to 67% by weight of said granules, and

an effective amount by weight of the granules, of a binder that binds said particles in a form which is granular, the amount of said binder being from 33% to 90% by weight of said granules, said binder being urea,

said binder, after distribution of the granules in the soil, being capable of undergoing disintegration with release of said particles thus permitting the action of water and microorganisms on said particles,

said granules being suitable in granule strength and weight for mechanical dispensing and for application to or into the soil, the average crush strength of a sample of said granules, selected to have sizes of 3 mm. to 4 mm., being at least one pound per granule, and said granules having been formed by solidifying said urea binder from the molten state so as to bind said particles in said urea, and

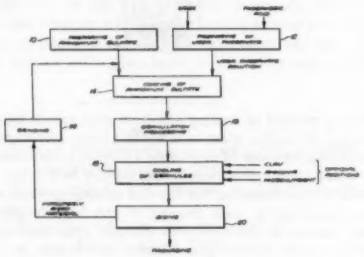
said particles furnishing from about 50% to about 90% of the fertilizer nitrogen thus applied to the soil.

4,554,004

PROCESS FOR GRANULATION OF FERTILIZER MATERIALS

Laurence W. Bierman; Charles R. Edinborough, and David K. Johnson, all of Pocatello, Id., assignors to J. R. Simplot Company, Boise, Id.

Filed Oct. 19, 1983, Ser. No. 543,488
Int. Cl.[4] B02C *19/12*; C05B *15/00*
U.S. Cl. 71—29 **14 Claims**



1. A process for preparing a granulated product from fine particles of a non-thermoplastic material, comprising the steps of:

providing a liquid solution of urea phosphate;

providing the non-thermoplastic material as finely divided solid particles;

coating the particles with urea phosphate;

granulating the coated particles at a temperature within the thermoplastic range of the urea phosphate, to adhere the finely divided particles together into granules.

4,554,005

TRIAZONE FERTILIZER AND METHOD OF MAKING

Edwin F. Hawkins, Baton Rouge, La., assignor to Arcadian Corporation, Parsippany, N.J.

Filed Aug. 28, 1984, Ser. No. 644,975
Int. Cl.[4] C05C *9/00*
U.S. Cl. 71—30 **28 Claims**

1. A liquid fertilizer composition consisting essentially of: as calculated on a dry weight basis of 100% solids, triazone composition that is substantially soluble in water, present at at-least about 30% (dry weight), urea present in an amount of at-least about 40% (dry weight) such that a ratio of amount of triazone present relative to amount of urea present is at-least about 0.48, methylene diurea up to about 3% (dry weight), monomethylolurea up to about 6% (dry weight) with total weight (dry weight) of methylene diurea and monomethylolurea up to about 6%, hexamethylenetetramine up to 2% (dry weight), and water in an amount at-least sufficient for solution of said triazone composition, said urea, said methylene diurea, said monomethylolurea and said hexamethylenetetramine being dissolved therein, and said triazone composition on a dry weight basis, relative to said methylene diurea being a ratio of at-least about 11.

4,554,006
PHENYLPROPYLAMMONIUM SALTS, THEIR MANUFACTURE AND AGENTS CONTAINING THESE COMPOUNDS

Ernst Buschmann; Bernd Zeeh, both of Ludwigshafen; Johann Jung, Limburgerhof, and Hubert Sauter, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 213,789

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1979, 2952382

Int. Cl.[4] **C07D** *207/08;* **A01N** *33/04*

U.S. Cl. 71—76 **1 Claim**

1. A phenylpropylammonium salt selected from the group consisting of N-allyl-N-[3-(2-fluorophenyl)-2-methylpropyl]-pyrrolidinium bromide, N-ally-N-[3-(2,4-dichlorophenyl)-2-methylpropyl]-pyrrolidinium bromide, N-allyl-N-[3-(2,4-dichlorophenyl)-2-isopropyl-propyl]-pyrrolidinium bromide, N-allyl-N-[3-(2,4-dichlorophenyl)-2-propylpropyl]-pyrrolidinium bromide, N-allyl-N-[2-methyl-3-(o-methylphenyl)-propyl]-pyrrolidinium bromide and N-allyl-N-[3-(4-chlorophenyl)-2-methylpropyl]-pyrrolidinium bromide.

4,554,007
GEOMETRICAL ISOMER OF 1-SUBSTITUTED-1-TRIAZOLYLSTYRENES, AND THEIR PRODUCTION AND USE AS FUNGICIDE, HERBICIDE AND/OR PLANT GROWTH REGULANT

Yuji Funaki; Hirofumi Oshita, both of Toyonaka; Shigeo Yamamoto, Ikeda; Shizuya Tanaka, Minoo, and Toshiro Kato, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

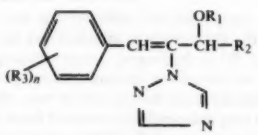
Filed Mar. 13, 1980, Ser. No. 130,108

Claims priority, application Japan, Mar. 20, 1979, 54-32876; Apr. 5, 1979, 54-41659; Aug. 6, 1979, 54-100547; Sep. 10, 1979, 54-116576; Sep. 21, 1979, 54-122366; Sep. 25, 1979, 54-123485; Sep. 26, 1979, 54-124571; Jan. 30, 1980, 55-10568

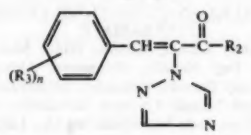
Int. Cl.[4] **A01N** *43/64;* **C07D** *249/08*

U.S. Cl. 71—076 **7 Claims**

1. A geometrical isomer of the formula,

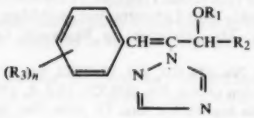


wherein R_1 is a hydrogen atom, a C_1–C_4 alkyl, C_3–C_4 alkenyl or 2-propynyl group, R_2 is a C_1–C_6 alkyl, cyclopropyl or 1-methylcyclopropyl group, R_3, which may be the same or different, is a halogen atom, a C_1–C_4 alkyl, halogen-substituted C_1–C_3 alkyl, C_1–C_4 alkoxy, phenoxy, phenyl, cyano or nitro group, and n is an integer of 0 to 3, obtained by reducing one of the two geometrical isomers of a triazole compound represented by the formula,

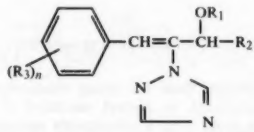


wherein R_2, R_3 and n are as defined above and in which the olefin proton appears at a higher magnetic field on the NMR spectrum in deutero chloroform, or by further etherifying the resulting reduced product, or its salts.

6. A fungicidal, herbicidal and/or plant growth regulating composition for agriculture and horticulture use comprising as an active ingredient a fungicidally, herbicidally, or plant growth regulating effective amount of a geometrical isomer of the formula,



wherein R_1, R_2, R_3 and n are as defined in claim **1**, obtained by reducing one of the two geometrical isomers of a triazole compound represented by the formula,



wherein R_2, R_3 and n are as defined in claim **1** and in which the olefin proton appears at a higher magnetic field on the NMR spectrum in deutero chloroform, or by further etherifying the resulting reduced product, or salts thereof, and an agriculturally or horticulturally acceptable carrier.

4,554,008
HERBICIDAL ANTIDOTES

Reed A. Gray, Saratoga, Calif., assignor to Stauffer Chemical Co., Westport, Conn.

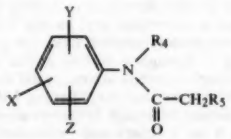
Division of Ser. No. 026,112, Apr. 2, 1979, Pat. No. 4,420,322. This application Sep. 6, 1983, Ser. No. 529,320

Int. Cl.[4] **A01N** *25/32*

U.S. Cl. 71—83 **12 Claims**

1. An herbicidal composition consisting essentially of

(a) an acetanilide herbicide of the formula



in which

X, Y and Z are independently selected from the group consisting of hydrogen and 1–4 carbon alkyl;

R_4 is selected from the group consisting of 1–6 carbon alkyl, and 2–10 carbon alkoxyalkyl; and

R_5 is selected from the group consisting of chlorine, bromine, and iodine; whereby the improvement consists of reducing the injury to said crop by employing

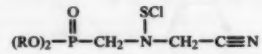
(b) a non-phytotoxic antidotally effective amount of an azide salt selected from the group consisting of alkali and alkaline earth elements or ammonium, said azide salt being antidotally active with said acetanilide herbicide.

4,554,009
METHOD OF CONTROLLING UNDESIRED PLANTS WITH THIOSULFENAMIDE DERIVATIVES OF N-PHOSPHONOMETHYLGLYCINONITRILES

James A. Sikorski, West Lafayette, Ind., and Mary A. Hoobler, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 514,403, Jul. 18, 1983, Pat. No. 4,508,663, which is a division of Ser. No. 309,321, Oct. 5, 1981, Pat. No. 4,407,763. This application Aug. 23, 1984, Ser. No. 643,605
Int. Cl.[4] A01N *57/20*
U.S. Cl. 071—087 4 Claims

1. A method of controlling undesired plants which comprises applying to said plants or plant growth medium a herbicidally effective amount of a compound of the formula



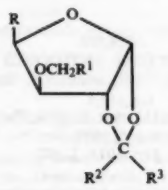
wherein R is selected from the group consisting of phenyl, naphthyl or biphenylyl; or phenyl, naphthyl or biphenylyl substituted with from 1 to 3 substituents independently selected from the group consisting of lower alkyl, lower alkoxy, lower alkylthio, alkoxycarbonyl, methylenedioxy, trifluoromethyl, cyano, nitro and halogen.

4,554,010
5-DEOXY-3-O-ARYLMETHYL OR SUBSTITUTED ARYLMETHYL-1,2-O-SUBSTITUTED-ALKYLIDENE-ALPHA-D-XYLOFURANOSE HERBICIDE DERIVATIVES

William Loh, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 7, 1983, Ser. No. 559,126
Int. Cl.[4] A01N *43/08*; C07H *17/04*
U.S. Cl. 71—88 28 Claims

1. A compound having the formula:



(I)

wherein R is lower alkyl having 1 through 4 carbon atoms or alkenyl having 2 through 4 carbon atoms;

R^1 is 2-trifluoromethylphenyl, aryl having 6 through 10 carbon atoms or substituted aryl having 1 through 4 substituents independently selected from the group of lower alkyl having 1 through 4 carbon atoms, lower alkoxy having 1 through 4 carbon atoms, cyano and halo;

one of R^2 or R^3 is lower haloalkyl having 1 through 3 halo atoms; aryl having 6 through 10 carbon atoms; substituted aryl having 1 or 2 substituents independently selected from the group of lower alkyl, lower alkoxy, halo and trifluoromethyl; arylalkyl wherein the alkyl moiety has 1 or 2 carbon atoms and the aryl moiety has 6 through 10 carbon atoms or ring substituted arylalkyl wherein the alkyl moiety has 1 or 2 carbon atoms and the aryl moiety is as defined hereinabove for substituted aryl and the other of R^2 or R^3 is hydrogen, lower alkyl, lower halo alkyl having 1 through 3 halo atoms; aryl; substituted aryl; arylalkyl; or ring substituted aryl wherein said aryl, substituted aryl, arylalkyl and substituted arylalkyl are as defined hereinabove, or R^2 and R^3 together with the carbon atom to which they are joined form a cyclopentyl or cyclohexyl group.

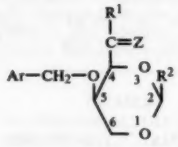
23. A method for treating undesired vegetation which comprises supplying a herbicidally effective amount of the compound of claim 1 or mixtures thereof, to the foliage and/or growth medium of said vegetation.

4,554,011
HERBICIDAL 2S-(2β,4β,5β)-5-ARYLMETHOXY-4-SUBSTITUTED 2-ALKYL-1,3-DIOXANE DERIVATIVES

William Loh, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 24, 1984, Ser. No. 645,451
Int. Cl.[4] A01N *43/00*; C07D *401/00, 319/06*
U.S. Cl. 71—88 40 Claims

1. A compound having the formula:



(I)

wherein

R^1 is methyl, ethyl, n-propyl or n-butyl;

R^2 is lower alkyl having 1 through 6 carbon atoms;

Ar is phenyl, thienyl, pyridyl or substituted phenyl having 1 or 2 substituents independently selected from the group of lower alkyl having 1 through 6 carbon atoms; lower alkoxy having 1 through 6 carbon atoms; halo; and haloalkyl having 1 or 2 carbon atoms and 1 through 4 of the same or different halo atoms; and

Z is oxo or the group

wherein the wavy bond line indicates that the carbon atom to which the OR^3 group is attached can be R or S oriented, and R^3 is hydrogen, lower alkanoyl having 2 through 6 carbon atoms, benzoyl, phenoxyacetyl or substituted phenoxyacetyl having one or two substituents on the phenyl ring independently selected from the group of fluoro, chloro, bromo, iodo or trifluoromethyl;

and wherein said compound of Formula I has the stereo configuration 2-S-(2β,4β,5β)-.

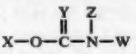
33. A herbicidal composition comprising a herbicidally effective amount of a compound according to claim 1, or mixtures of such compounds, and a compatible carrier.

4,554,012
ARYL N-ALKYL-N-(PYRIDYL OR PYRIMIDYL) CARBAMATE

Tetsuo Takematsu; Konnai, Makoto; Hideo Morinaka, all of Utsunomiya; Yuji Nonaka, Shinnanyo; Akira Nakanishi, Shinnanyo; Kenji Tsuzuki, Shinnanyo; Mitsuyuki Hashihama, Shinnanyo, and Takeshi Uwotani, Shinnanyo, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Filed Jun. 8, 1983, Ser. No. 502,170
Claims priority, application Japan, Jun. 10, 1982, 57-98485; Jul. 27, 1982, 57-129651; Sep. 10, 1982, 57-156710; Mar. 4, 1983, 58-34651
Int. Cl.[4] A01N *43/48*; C07D *239/72*
U.S. Cl. 71—92 9 Claims

1. A carbamate compound of the formula (I)



(I)

wherein

X is 2-naphthyl, 5-indanyl, 5,6,7,8-tetrahydro-2-naphthyl, 1,4-methano-1,2,3,4-tetrahydro-6-naphthyl, 1,4-ethano-1,2,3,4-tetrahydro-6-naphthyl, or phenyl having one or more substituents which may be the same or different, and are selected from the group consisting of halogen, lower alkyl, lower alkenyl, lower alkoxy, lower alkenyloxy, lower alkynyloxy, lower alkylthio, lower alkylamino, (hydroxy)-lower alkyl, (lower alkoxy)-lower alkyl, (C_1–C_2) acyl, nitro, cyano, methylenedioxy, and halogenated lower alkyl,

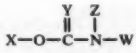
Y is an oxygen atom or a sulfur atom,

Z is lower alkyl,

W is pyridyl substituted by one or two of the same substituents selected from the group consisting of halogen, lower alkyl, and lower alkylamino when X is 2-naphthyl but W is pyridyl which may be substituted by one or two of the same or different substituents selected from the group consisting of halogen, nitro, lower alkyl, lower alkoxy, lower alkylthio, and lower alkylamino when X is other than 2-naphthyl.

7. A herbicide comprising

the carbamate of formula (I)



(I)

as an active ingredient, and

a carrier.

4,554,013

HERBICIDAL IMIDAZOLINYL NAPHTHOIC ACIDS

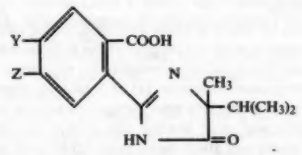
Marinus Los, Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 519,616, Aug. 2, 1983, abandoned. This application Jul. 16, 1984, Ser. No. 631,283

Int. Cl.[4] **A01N** *43/50;* **C07D** *233/70*

U.S. Cl. 71—92 **9 Claims**

6. A method for the control of monocotyledonous and dicotyledonous annual, perennial and aquatic plant species comprising: applying to the foliage of the plants or to soil or water containing seeds or other propagating organs thereof, a herbicidally effective amount of a compound having a structure:



wherein Y and Z taken together are —$(CH_2)n$— where n=2–4 or —CH=CH_2—CH=CH_2.

4,554,014

O-ARYLOXYPHENOXYACYL-α-N,N,-DIALKYLAMINOOXIMES AND HERBICIDAL METHODS OF USE

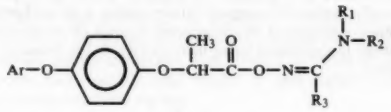
Charles G. Carter, San Francisco, and David L. Lee, Martinez, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 20, 1984, Ser. No. 602,305

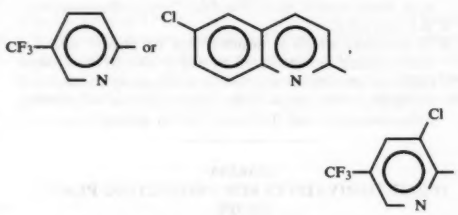
Int. Cl.[4] **C07D** *213/64;* **A01N** *43/40*

U.S. Cl. 71—94 **13 Claims**

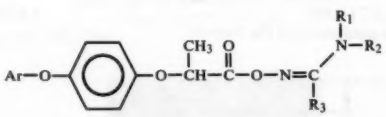
1. O-aryloxphenoxyacyl-α-N,N-dialkylaminooxime having the formula



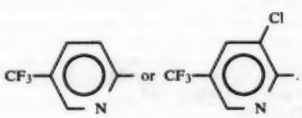
wherein R_1 and R_2 are each the same or different and are selected from alkyl groups having from 1 to 4 carbon atoms, and R_3 is selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms, phenyl and halogen substituted phenyl groups; and Ar is selected from the group consisting of



9. A method for controlling undesirable weed pests which comprises appying to the locus where control is desired a herbicidally effective amount of a compound having the formula



wherein R_1 and R_2 are each the same or different and are selected from alkyl groups having from 1 to 4 carbon atoms, R_3 is selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms, phenyl and halogen substituted phenyl groups; and Ar is selected from the group consisting of



4,554,015
HERBICIDES

Tetsuo Takematsu; Makoto Konnai; Hideo Morinaka, all of Utsunomiya; Yuji Nonaka, Shinnanyo; Akira Nakanishi, Shinnanyo; Kenji Tsuzuki, Shinnanyo; Mitsuyuki Hashihama, Shinnanyo, and Takeshi Uwotani, Shinnanyo, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

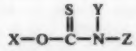
Filed Jun. 22, 1983, Ser. No. 506,892

Claims priority, application Japan, Jun. 23, 1982, 57-106737; Aug. 17, 1982, 57-141712; Feb. 2, 1983, 58-14596; Mar. 1, 1983, 58-31836

Int. Cl.[4] A01N *37/00*

U.S. Cl. 71—100 **5 Claims**

1. A method for the control of weeds, comprising the application of a herbicidal composition containing a thiocarbamate derivative represented by the general formula (I) as an active ingredient incorporated in an inert carrier to the locus to be protected



wherein

X is 5-indanyl, 5,6,7,8-tetrahydro-2-naphthyl, 1,4-methano-1,2,3,4-tetrahydro-6-naphthyl, 1,4-ethano-1,2,3,4-tetrahydro-6-naphthyl, or substituted phenyl having one or two of the same or different substituents selected from the group consisting of halogeno, lower alkyl, lower alkoxy, lower alkenyloxy, lower alkynyloxy, lower alkylthio, acyl, nitro, cyano, methylenedioxy, and trifluoromethyl,

Y is lower alkyl,

Z is naphthyl which is unsubstituted or phenyl which is unsubstituted or substituted by one or two of the same or different substituents selected from the group consisting of halogeno, lower alkyl, lower alkoxy, lower alkylamino, trifluoromethyl, and fluorinated lower alkoxy.

4,554,016
OXIME DERIVATIVES FOR PROTECTING PLANT CROPS

Werner Föry, Basel; Henry Martin, Allschwil, both of Switzerland, and Georg Pissiotas, Lörrach, Fed. Rep. of Germany, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

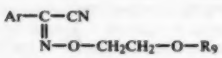
Division of Ser. No. 68,263, Aug. 20, 1979, Pat. No. 4,353,735. This application Jul. 14, 1982, Ser. No. 398,170

Claims priority, application Switzerland, Aug. 31, 1978, 9201/78

Int. Cl.[4] A01N *37/34*; C07C *121/52*

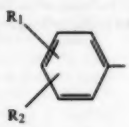
U.S. Cl. 71—105 **6 Claims**

1. A compound of the formula



wherein

Ar is 1-naphthyl or



in which

R_1 is hydrogen, halogen, lower alkyl or lower alkoxy, and

R_2 is hydrogen or halogen, and

R_9 is lower alkenyl.

6. An antidote composition for use in safening plants against the harmful effects of potent herbicides which comprises (1) a compound according to claim 1 and (2) a carrier.

4,554,017
METHOD AND COMPOSITIONS FOR REGULATING PLANT GROWTH USING CYCLOALKANE-CARBOXYLIC ACID COMPOUNDS

Rolf Schröder, Wuppertal, and Klaus Lürssen, Berg.Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

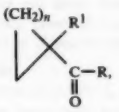
Filed May 11, 1979, Ser. No. 38,153

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1978, 2824517; Feb. 20, 1979, 2906507

Int. Cl.[4] A01N *53/00, 37/08, 37/18*

U.S. Cl. 71—113 **6 Claims**

1. Method of regulating the growth of plants which method comprises applying to the plants or their habitat a plant growth regulant composition comprising as an active ingredient at least one cycloalkanecarboxylic acid compound of the formula



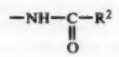
(I)

in which

R is hydroxyl, alkoxy of 1 to 10 carbon atoms, benzyloxy, amino, alkylamino or dialkylamino of 1 to 4 carbon atoms in each alkyl or the radical

wherein $M^{\oplus}$ is a sodium or potassium ion, one magnesium or calcium ion equivalent; an ammonium, alkylammonium, dialkylammonium, trialkylammonium or tetraalkylammonium ion with, in each case, 1 to 4 carbon atoms per alkyl radical;

R^1 is amino or the radical



wherein R^2 is hydrogen, alkyl of up to 4 carbon atoms or phenyl, or

R^1 is the radical $-N^{\oplus}H_3X^{\ominus}$, wherein $X^{\ominus}$ is chloride, and n is 1 or 2.

4,554,018
PRODUCTION OF POLYMERIC THICKENERS AND THEIR USE IN PRINTING

Adrian S. Allen, Bradford, England, assignor to Allied Colloids Limited, England

Filed Feb. 1, 1984, Ser. No. 575,735

Int. Cl.[4] C09D *11/02*

U.S. Cl. 106—20 **21 Claims**

1. A process in which a water insoluble, water swellable or swollen polymer is made by reverse phase polymerisation of a water soluble blend of copolymerisable monomers and in which the monomers comprise (a) at least one ethylenically unsaturated acid having free acid groups, (b) at least one ethylenically unsaturated acid having salt groups selected from ammonium, amine and alkali metal salts, (c) at least one ethylenically unsaturated cross-linking agent, and in which the molar proportions of the said free acid groups to the said salt groups during the polymerisation are 80:20 to 10:90.

4,554,019

LETTERPRESS PRINTING INK

John T. Moynihan, Herndon, Va., assignor to American Newspaper Publishers Association, Reston, Va.

Continuation-in-part of Ser. No. 337,220, Jan. 6, 1982, Pat. No. 4,419,132. This application Nov. 30, 1983, Ser. No. 556,493
The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.
Int. Cl.[4] C09D *11/06*
U.S. Cl. 106—27 5 Claims

1. A letterpress printing ink composition consisting essentially of:

a. Carbon black pigment in the range 6.0 to 19.8%

b. Gilsonite in the range 16.4 to 26.3%, and

c. Tall oil fatty acid in the range 52.7 to 70.5%.

4,554,020

HYDRAULIC CEMENT ADMIXTURE COMPOSITIONS

David H. Hollenberg, Neenah, Wis., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Mar. 29, 1984, Ser. No. 595,066
Int. Cl.[4] C04B *7/35*
U.S. Cl. 106—90 14 Claims

1. A hydraulic cement composition comprising a hydraulic cement binder and an amine salt of a borate ester of a polyhydroxy compound.

4,554,021

PREPARATION OF A CATIONIC STARCH PASTE

Richard D. Harvey, Muscatine; E. Daniel Hubbard, West Liberty, and Robert A. Meintrup, Muscatine, all of Iowa, assignors to Grain Processing Corporation, Muscatine, Iowa

Continuation-in-part of Ser. No. 121,401, Feb. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 893,510, Apr. 4, 1978, abandoned. This application May 28, 1982, Ser. No. 383,253
Claims priority, application Spain, Apr. 2, 1979, 479.185
Int. Cl.[4] C08L *3/02*
U.S. Cl. 106—213 19 Claims

1. A process for preparing cationic starch pastes comprising:

a. preparing an aqueous starch paste having a solids level in the range from about 10% to 40% by weight,

b. treating said starch paste with a cationic monomeric halogenated alkyl or alkenyl amine, said cationic monomeric halogenated alkyl or alkenyl amine being used in an amount to provide a starch derivative having a degree of substitution less than about 0.05,

c. reacting said treated starch with an amount of an alkali in the range of 1.5 to 8% based on dry solids weight of starch at a temperature of 120° F. to 200° F., wherein the solids level of the starch paste, the amount of alkali and the temperature and period of reaction are adjusted to achieve a reaction efficiency of at least about 40%.

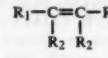
4,554,022

ADDITIVES FOR HOT MIX ASPHALT

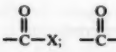
Anthony V. Grossi; Louis T. Hahn, and Alfred Marzocchi, all of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 7, 1984, Ser. No. 607,859
Int. Cl.[4] C08L *95/00*; C09D *3/24*
U.S. Cl. 106—273 N 10 Claims

1. A method of increasing the bonding energy between an asphalt and an aggregate which comprises incorporating into said asphalt a chemically-modified asphalt composition obtained by heating a mixture consisting of a vinyl monomer having the general formula



wherein R_1 is an aromatic group containing 6 to 12 carbon atoms, R_2 is hydrogen or lower alkyl group and R_3 is hydrogen or a lower alkyl or a group selected from the group consisting of $—CH_2OH$; —CHO;



and $—CH_2—CN$ wherein X is a halogen;

an alkenyl azabenzene and an asphalt at a temperature of at least 110° C. for at least about 8 hours, wherein said chemically modified asphalt comprises from about 1 to about 10 weight percent based on the total weight of said asphalt and said chemically-modified asphalt.

4,554,023

MODIFIED ASPHALT

Richard T. Janicki, Oak Lawn, Ill., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Nov. 29, 1983, Ser. No. 556,201
Int. Cl.[4] C08L *95/00*
U.S. Cl. 106—273 N 5 Claims

1. A roofing product including a composition comprising an asphalt and bis-stearoylamide, the bis-stearoylamide improving the weatherability of the product and constituting from about 2 to about 6% of the weight of the combination of asphalt and bis-stearoylamide.

4,554,024

METHOD FOR PREPARING AN IMPROVED PITCH IMPREGNANT FOR A CARBON-CARBON COMPOSITE

James E. Zimmer, San Jose, and Linda M. Salvador, Fremont, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 13, 1984, Ser. No. 579,625
Int. Cl.[4] C08L *95/00*
U.S. Cl. 106—284 4 Claims

1. In a process for producing a carbon fiber-reinforced carbon-carbon composite comprising the steps of impregnating a multidirectional carbon fiber reinforcing structure with a pitch, carbonizing said pitch and graphitizing the resulting structure, the improvement which comprises solvent extracting said pitch sequentially with cyclohexane and pyridine and impregnating said reinforcing structure with the fraction which is insoluble in cyclohexane and soluble in pyridine.

4,554,025

METHOD OF REMOVING BUILT-UP LAYERS OF ORGANIC COATINGS

Thomas W. Burke, Allentown; Robert A. Welch; Kevin S. Schmoyer, both of Breinigsville, and Bernard D. Bauman, Coopersburg, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 538,258, Oct. 3, 1983, abandoned. This application Mar. 18, 1985, Ser. No. 712,506

Int. Cl.[4] B08B *7/04*

U.S. Cl. 134—17 8 Claims

1. A continuous, on-line process for removing layers of paint from a support device for a product in a paint finishing operation, which comprises:

(a) cryogenically treating said support device having a critical surface tension between about 15 to 25 dynes/cm, after a build-up of paint has occurred on said support device, said cryogenic treatment being sufficient to embrittle the paint; and

(b) subsequently removing the paint from said cryogenically treated support device using a gas or liquid blast free of any solid, abrasive particles.

4,554,026

AQUEOUS HYDROTROPE SOLUTIONS FOR PAINT DETACKIFIERS

David R. Cosper, Downers Grove, Ill., and Gretchen L. McKay, Cincinnati, Ohio, assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 573,089, Jan. 23, 1984, Pat. No. 4,523,932, which is a continuation-in-part of Ser. No. 390,294, Jun. 21, 1982, Pat. No. 4,444,573. This application Nov. 13, 1984, Ser. No. 670,800

The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.

Int. Cl.[4] B08B *7/00*

U.S. Cl. 134—38 6 Claims

1. A method for the detackification of oversprayed paint solids which comprises contacting such oversprayed paint solids with an aqueous alkaline hydrotrope solution and then recovering detackified paint solids, said hydrotrope being selected from the group consisting of aliphatic and aromatic hydrotropes and blends thereof wherein when the hydrotrope is aliphatic, it contains from 3–10 carbon atoms and when it is aromatic, it contains from 6–9 carbon atoms, said hydrotrope being further characterized as containing a polar group from the group consisting of carboxylate, phosphate, phosphonate, sulfates, or sulfonates.

4,554,027

SHAPED PART MADE OF A COMPOSITE MATERIAL AND A PROCESS FOR ITS PRODUCTION

Peter Tautzenberger, Niefern-Öschelbronn; Friedrich Schneider, Pforzheim, and Dieter Stoeckel, Birkenfeld, all of Fed. Rep. of Germany, assignors to G. Rau GmbH & Co., Pforzheim, Fed. Rep. of Germany

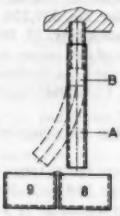
Filed May 17, 1984, Ser. No. 611,164

Claims priority, application Fed. Rep. of Germany, May 28, 1983, 3319395

Int. Cl.[4] B21D *53/00*

U.S. Cl. 148—11.5 R 9 Claims

1. Shaped part made of a composite material having shape memory properties, said shaped part comprising a plurality of sections, at least several of which have different shape memory properties capable of achieving two-way and/or one-way effects, said sections being coupled metallurgically together in such a way that results of said shape memory effects which are independent of one another cause temperature-specific changes in the shape of said shaped part, in the course of which said shaped part assumes the same number of permanent and-



/or reversible shapes as the number of said sections having shape memory properties.

4,554,028

LARGE WARM WORKED, ALLOY ARTICLE

Terry A. DeBold, Wyomissing; John H. Magee, Jr., and Norman B. Schmidt, both of Reading, all of Pa., assignors to Carpenter Technology Corporation, Reading, Pa.

Filed Dec. 13, 1983, Ser. No. 560,932

Int. Cl.[4] C22C *38/58*

U.S. Cl. 148—38 22 Claims

1. An austenitic, non-magnetic, stainless steel, alloy article which has a large section size, which has been significantly warm worked between about 1500° F. and 1650° F. but not subsequently annealed, which has a 0.2% yield strength of at least about 90 ksi, and which, when formed into a U-bend, does not undergo stress corrosion cracking within about 700 hours in boiling saturated aqueous sodium chloride containing 2 weight percent (w/o) ammonium bisulfite; the alloy of the article consisting essentially of about:

Elements	w/o
C	0.1 Max.
Mn	1–11
Si	0.6 Max.
Cr	18–23
Ni	14–25
Mo	2.5–6.5
Cu	2 Max.
B	.01 Max.

N ranging from a minimum of about 0.15 w/o to no more than the amount that can be retained in solid solution; C+N being equal to at least about:

$$\frac{Cr + Mo + 1.5Si + 0.87Mn - Ni - 6.1}{30}$$

and the balance being essentially iron.

4,554,029

LOCAL HEAT TREATMENT OF ELECTRICAL STEEL

Jerry W. Schoen, Hamilton, and Russel L. Young, Collinsville, both of Ohio, assignors to Armco Inc., Middletown, Ohio

Filed Nov. 8, 1982, Ser. No. 439,884

Int. Cl.[4] H01F *1/04*

U.S. Cl. 148—112 5 Claims

1. A process for improving the core loss of magnetic material of the type having a plurality of magnetic domains, said magnetic material being chosen from the class consisting of cube-on-edge regular grain oriented silicon steel strip, cube-on-edge oriented high-permeability grain oriented silicon steel strip and cube-on-face oriented silicon steel strip, said magnetic material having been subjected to a high temperature anneal to develop its grain orientation, said magnetic material having an

insulative coating thereon chosen from the class consisting of a mill glass, an applied coating and an applied coating over a mill glass, said process comprising the steps of subjecting said magnetic material, after said high temperature grain orientation developing anneal to a local heat treatment by radio frequency induction heating or radio frequency resistance heating at a frequency of at least about 450 kHz so as to produce in said magnetic material narrow parallel bands of heat treated re-

gions with untreated regions therebetween, said heat treated bands having a length (x) of less than 1.5 mm and said treated regions having a length (X) of at least 2 mm, said heat treatment for each of said bands being accomplished in less than 0.5 seconds, and thereafter annealing said locally heat treated magnetic material at a temperature of at least about 800° C. whereby to introduce artificial boundaries to decrease the 180° magnetic domain wall spacing of said magnetic material without degradation of said insulative coating.

4,554,030

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE BY MEANS OF A MOLECULAR BEAM TECHNIQUE

Jan Haisma; Poul K. Larsen, both of Groenewoudseweg 1, Eindhoven; Tim De Jong, Gerstweg 2, Nijmegen; Johannes F. Van der Veen, Lothariuslaan 107, Bussum, all of Netherlands; Willem A. S. Douma, Private Bag 0022, Gaborono, Botswana, and Frans W. Saris, Jennerstraat 1, Amsterdam, Netherlands

Filed Mar. 2, 1984, Ser. No. 585,649

Claims priority, application Netherlands, Mar. 3, 1983, 8300780

Int. Cl.⁴ H01L *21/203, 21/324*

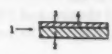
U.S. Cl. 148—175 **4 Claims**

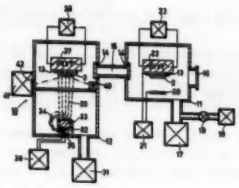
1. A method of manufacturing a semiconductor device comprising the steps of

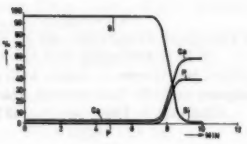
providing a first monocrystalline semiconductor layer of a first material having a surface region,

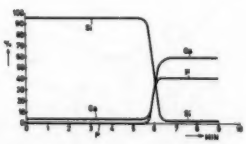
forming a second semiconductor layer of a second material onto said surface region of said first layer by a molecular beam particle deposition technique, said second layer being formed at a first temperature providing a non-monocrystalline semiconductor layer, said molecular beam particle deposition technique forming a particle beam of at least one of atoms and molecules of said second semiconductor layer, and thereafter

heating said non-monocrystalline semiconductor layer to a second temperature for converting said non-monocrystal-









line semiconductor layer into a monocrystalline semiconductor layer.

4,554,031

COLD MOLDABLE EXPLOSIVE COMPOSITION

Hildebert Kerviel, Chelles, and Serge Poulard, Saint-Mande, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 27, 1984, Ser. No. 604,937

Claims priority, application France, May 3, 1983, 83 07347

Int. Cl.⁴ C06B *45/10*

U.S. Cl. 149—19.3 **3 Claims**

1. A cold-mouldable explosive composition comprising from about 85% to 98% by weight of at least one explosive selected from the group consisting of cyclotetramethylenetetranitramine (octogen), cyclotrimethylenetrinitramine (hexogen), triaminotrinitrobenzene (TATB), pentaerythritoltetranitrate (pentrite) and hexanitrostilbene (HNS), from about 1.5 to 11% by weight of a thermoplastic elastomeric binder comprising a copolymer of trifluorochloroethylene and vinylidene fluoride, and from about 0.5 to 4% of a fluorinated plasticizer comprising a trifluorochloroethylene polymer having a molecular weight of from about 500 to 1000.

4,554,032
WATER-IN-OIL EMULSION EXPLOSIVE COMPOSITION

Katsuhide Hattori; Yoshiaki Fukatsu, and Hiroshi Sakai, all of Aichi, Japan, assignors to Nippon Oil and Fats Company, Limited, Tokyo, Japan

Filed Aug. 28, 1984, Ser. No. 645,080
Claims priority, application Japan, Sep. 5, 1983, 58-161880
Int. Cl.⁴ C06B *45/02*
U.S. Cl. 149—21 **1 Claim**

1. A water-in-oil emulsion explosive composition comprising:

a disperse phase consisting of an aqueous solution of inorganic oxidizer salts containing ammonium nitrate;

a continuous phase consisting of a carbonaceous fuel;

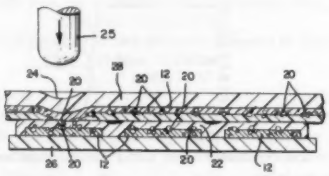
an emulsifier; and,

a gas-retaining agent, wherein said gas-retaining agent consists of hollow microspheres obtained by firing volcanic ash, said hollow microspheres having a bulk density of 0.05–0.1 and an average particle size of 10–100 μm.

4,554,033
METHOD OF FORMING AN ELECTRICAL INTERCONNECTION MEANS

Ronald A. Dery, and Warren C. Jones, both of Winston-Salem, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 4, 1984, Ser. No. 657,851
Int. Cl.⁴ H01B *13/06*
U.S. Cl. 156—52 **10 Claims**



1. A method of connecting at least one conductive path of a first insulating member with at least one conductive means on a second insulating member comprising the steps of:

selecting the first insulating member;

applying at least one conductive path to said first insulating member, said conductive path being in the form of a conductive ink including an insulating medium having a first group of finely divided conductive particles uniformly suspended and dispersed throughout said insulating medium and a second group of large size conductive particles randomly scattered throughout said insulating medium, some of said large size conductive particles projecting outwardly from said insulating member;

applying an insulating thermoplastic adhesive layer secured onto said first insulating member covering said at least one conductive path;

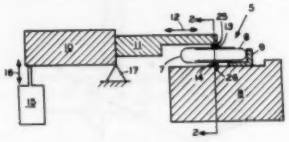
positioning said at least one conductive path in a conducting relationship with said at least one conductive means on said second insulating member such that said thermoplastic adhesive layer is disposed between said at least one conductive path and said at least one conductive means;

applying heat and pressure to the positioned at least one conductive path and at least one conductive means causing said thermoplastic adhesive layer to soften, flow, and become thinner thus causing said large conductive particles on said at least one conductive path to extend through said thermoplastic adhesive layer and make electrical connection with said at least one conductive means.

4,554,034
BONDING CAPSULES

Dale Ensminger, Columbus, Ohio, assignor to Battelle Memorial Institute, Columbus, Ohio

Filed Nov. 15, 1984, Ser. No. 671,665
Int. Cl.⁴ B29C *27/08*; B65D *83/04*
U.S. Cl. 156—69 **16 Claims**



1. Apparatus for bonding an overlapping portion of the outer cap and inner body of a closed largely cylindrical capsule, comprising

flexible coupling means positioned around and contiguous to at least a part of the outer circumference of the overlapping portion of the cap,

means for compressing the coupling means to provide an inward compressive force on the capsule, and

means for applying ultrasonic energy to the coupling means in a direction substantially parallel to the axis of the capsule to provide a bond between the cap and the body over at least a substantial portion of the part of the capsule in contact with the coupling means.

8. A method of bonding an overlapping portion of the outer cap and inner body of a closed largely cylindrical capsule, comprising

placing flexible coupling means around and contiguous to at least a part of the outer circumference of the overlapping portion of the cap,

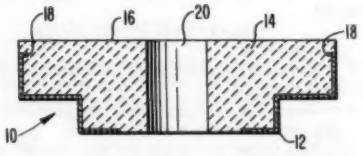
compressing the coupling means to provide an inward compressive force on the capsule, and

applying ultrasonic energy to the coupling means in a direction substantially parallel to the axis of the capsule to provide a bond between the cap and the body over at least a substantial portion of the part of the capsule in contact with the coupling means.

4,554,035
METHOD OF MANUFACTURING A SLIDE GATE

Joseph L. Stein, Pittsburgh, Pa., and Thomas J. Maskell, Niles, Ohio, assignors to General Refractories Company, Bala Cynwyd, Pa.

Continuation of Ser. No. 461,104, Jan. 26, 1983, abandoned, which is a division of Ser. No. 339,511, Jan. 15, 1982, Pat. No. 4,383,624, which is a continuation of Ser. No. 843,112, Oct. 17, 1977, abandoned. This application Mar. 15, 1984, Ser. No. 589,052
Int. Cl.⁴ B32B *31/20*
U.S. Cl. 156—89 **11 Claims**



1. A method of forming a slide gate portion of a valve for controlling the flow of molten material, said method comprising the steps of:

(a) providing a metal container disposed to form the metal portion of a slide gate valve, said container including an open portion for containing a refractory therein;

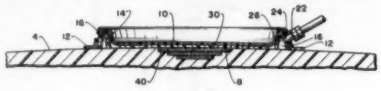
(b) placing a particulate mixture of ceramic material and a binder into said open portion of said refractory containing portion of said container;
(c) shaping said mixture in said container by applying pressure thereto while fully supporting said container; and
(d) heating said mixture in said container to form a chemical bond between the ceramic particles and to form a coherent unfired refractory and also to affix said refractory directly to said container.

4,554,036

PORTABLE VACUUM DEVICE AND METHOD OF USING SAME

Cosby M. Newsom, 15517 S. Seaforth Ave., Norwalk, Calif. 90650

Filed May 7, 1984, Ser. No. 607,779
Int. Cl.[4] B32B *35/00*
U.S. Cl. 156—94 **12 Claims**



11. The method of repairing a bondable workpiece in situ which comprises the steps of:
a. preparing the workpiece area having the flaw or fissure therein;
b. applying a bondable material patch to said flaw of fissure in sufficient amount to reconstruct the same, said bonding material being curable at or above ambient temperatures;
c. placing a portable vacuum bonding device over said flaw or fissure having bonding material therein and evacuating the ambient atmosphere in the area of said flaw or fissure and causing atmosphereic pressure to act upon the bonding material in said flaw or fissure; and
d. effectuating curing and setting of said bonding material and thereafter removing said device and finishing the workpiece surface in the area of said previous flaw or fissure.

4,554,037

CORN POPPING MACHINE AND METHOD OF ASSEMBLING THE SAME

James M. Goodlaxson, 705 E. 20th St. South, Newton, Iowa 50208

Division of Ser. No. 486,263, Apr. 18, 1983,. This application Jun. 8, 1984, Ser. No. 618,879
Int. Cl.[4] A23L *1/18*
U.S. Cl. 156—152 **6 Claims**

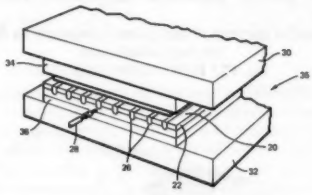
1. A method of assembling a corn popping machine having a vertically standing, three-sided, U-shaped transparent panel member having first, second and third sides with said first and third sides integrally forming corners with opposite edges of said second side, a top chassis plate assembly, a bottom base member and door means across the vertical open side of the panel means, the steps of the method comprising:
(a) attaching said top chassis plate to the top edge of the panel member utilizing securing means which retentively hold and grasp said top chassis plate to said top edge of said panel member;
(b) placing each edge of each side of said lower edge of said panel member into channel members secured to said base member, said channel members being of a length shorter than the width of each side of said panel member;
(c) flexing the outer corners of said second side of said panel member so as to produce a small gap between the outer edges of said second side and said base member outwardly of said channel member;
(d) inserting an adhesive substance between said flexed outer edges and said base member; and
(e) releasing said flexed sides after said adhesive substance has been inserted so that said edges return to an abutting position against said base and are secured by said adhesive substance.

4,554,038

PROCESS FOR FABRICATING LIGHTWEIGHT, RIGID SOLAR ARRAY SUBSTRATE

Ira L. Allard, Rancho Palos Verdes, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Aug. 29, 1980, Ser. No. 182,374
Int. Cl.[4] B32B *31/20*
U.S. Cl. 156—196 **22 Claims**



1. A process for making a rigid ultralightweight substrate from a thermoset plastic film comprising the steps of:
(a) forming rigidizing members on a first sheet of the film by placing the sheet over a female mold having the desired configuration including indentations therein corresponding to the rigidizing members to be formed in the sheets,
(b) bonding the first sheet and a second sheet together with an adhesive applied to the side of the first sheet opposite the rigidizing members,
(c) curing the adhesive to bond the sheets together so that the rigidizing members will not collapse, and
(d) removing the first sheet with the second sheet bonded thereto from the female mold.

4,554,039

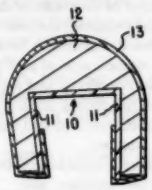
WATERBED RAIL AND METHOD OF MAKING SAME

Max F. James, Tea, S. Dak., assignor to Tea Industries, Inc., Tea, S. Dak.

Filed Apr. 2, 1984, Ser. No. 595,997
Int. Cl.[4] B29C *24/00*
U.S. Cl. 156—213 **2 Claims**

1. The method of making a padded rail which comprises laying out a precut sheet of cover material, placing preformed padding onto said cover material, said padding being formed in channel shape with a rounded exterior, said placing being such that the centerline of said cover material is aligned with the portion of said padding which is to be the highest part of the finished product, placing a preformed channel member into the

interior of the channel shape of the padding and drawing up the edges of said cover material around said padding and said



channel member and fastening said edges to the interior of said channel member.

4,554,040

METHOD OF FORMING A PRINTING SLEEVE

Hendricus J. van der Velden, Cuyk, Netherlands, assignor to Stork Screens B.V., At Boxmeer, Netherlands

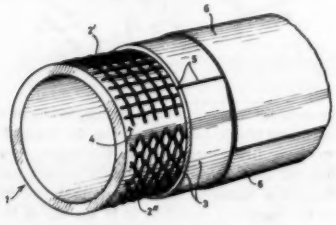
Filed Dec. 8, 1983, Ser. No. 559,214

Claims priority, application Netherlands, Dec. 8, 1982, 8204751

The portion of the term of this patent subsequent to Jul. 5, 2000, has been disclaimed.

Int. Cl.⁴ B29C *17/04*; G03F *7/02*

U.S. Cl. 156—215 **11 Claims**



1. A method of forming a cylindrical sleeve for a printing cylinder which comprises the steps of (1) providing a rigid support means which has cylindrical outer surface which is entirely smooth from one lateral side thereof to the other lateral side thereof, (2) placing a knitted fabric made of plastic fiber multifilaments around said cylindrical outer surface so as to be in direct contact therewith, said knitted fabric extending between the lateral sides of said cylindrical outer surface, the total thread thickness of the multifilaments used therein being between 10 to 200 microns and the mesh value thereof being between 2 and 25 meshes/inch, (3) applying a sheet of a thermoplastics, elastromeric material around the outer surface of said knitted fabric, said thermoplastic, elastomeric material being hardenable under the influence of light, and (4) simultaneously applying a vacuum to the sides of the knitted fabric adjacent the opposite lateral sides of said cylindrical outer surface and heating the support means, the knitted fabric and the sheet of thermoplastic, elastomeric material to an elevated temperature which is close to the plasticizing temperature of the sheet of thermoplastic, elastomeric material, resulting in in said sheet of thermoplastic, elastomeric material becoming bonded to said knitted fabric and to the outer surface of said rigid support means, thus forming the cylindrical sleeve.

4,554,041

METHOD OF PRODUCING A THERMALLY INSULATED BODY

Kurt Schreier, Breitenfurt; Karl Bartsch, Vienna; Helmut Knoll, Mürzhofen, and Gerd Tomazic, Mürzzuschlag, all of Austria, assignors to Vereinigte Edelstahlwerke Aktiengesellschaft, Vienna, Austria

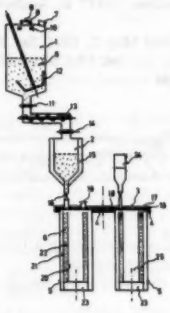
PCT No. PCT/AT83/00025, § 371 Date Apr. 12, 1984, § 102(e) Date Apr. 12, 1984, PCT Pub. No. WO84/00798, PCT Pub. Date Mar. 1, 1984

PCT Filed Aug. 17, 1983, Ser. No. 604,616

Claims priority, application Austria, Aug. 20, 1982, 3165/82

Int. Cl.⁴ B32B *31/06*

U.S. Cl. 156—276 **34 Claims**



1. A method for fabricating a thermally insulated body, especially a pipe, having an inner shell and an outer shell, especially a metallic inner shell and a metallic outer shell, defining a hermetically sealed intermediate space filled with at least one of a porous particulate insulating material and a porous powdered insulating material under vacuum, comprising the steps of:

evacuating the intermediate space between the outer shell and the inner shell;

maintaining the intermediate space under vacuum;

introducing at least one insulating material of the porous particulate insulating material and the porous powdered insulating material from a reservoir maintained under vacuum into the intermediate space between the outer shell and the inner shell;

electrically grounding the inner shell and the outer shell before performing said step of introducing said at least one insulating material; and

hermetically sealing the intermediate space.

4,554,042

MACHINE FOR SEALING VARIABLE-HEIGHT PARALLELEPIPEDAL CARTONS

Augusto Marchetti, Piazza Sicilia, 7, 20146 Milano, Italy

Continuation of Ser. No. 268,488, May 29, 1981, abandoned. This application Nov. 13, 1984, Ser. No. 671,001

Claims priority, application Italy, Feb. 13, 1981, 19710 A/81

Int. Cl.⁴ G05G *15/00*

U.S. Cl. 156—350 **15 Claims**

1. Machine for sealing variable-height parallelepipedal cartons, comprising:

a carton support and advancing base;

an upper sealing head superimposed to said support base in a vertically displaceable manner from a minimum-height position;

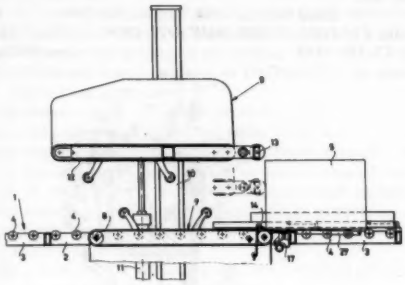
lifting means for lifting said head; and

sensing means engageable by the carton body to actuate said lifting means and cause said sealing head to rise automatically from said minimum-height position to a sufficient

height to allow the introduction of the carton between said support base and said sealing head, wherein

said sensing means are mounted on said support base in such a position as to be engageable by the bottom of the carton and wherein

said sensing means are formed in such a way as to include three operative positions comprising an initial rest position



and, first and second sequentially attainable working positions, in which said sensing means cause the ascent of the sealing head up to a sufficient height for the introduction of the carton and, respectively, once the introduction has been effected, allow the same head to descend again on the carton top;

said sensing means returning to said initial rest position upon disengagement of said bottom from said carton.

4,554,043

BELT PRESS WITH MULTIPLE PRESS FRAMES

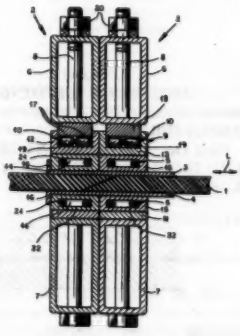
Harald Fudickar, Wuppertal, and Peter Thies, Ennepetal, both of Fed. Rep. of Germany, assignors to Wagener Schwelm GmbH & Co., Schwelm, Fed. Rep. of Germany

Filed Jun. 8, 1984, Ser. No. 618,503

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1983, 3320784

Int. Cl.[4] B30B *15/06*

U.S. Cl. 156—502 **16 Claims**



1. A press for joining or repairing a wide flat belt, the press being formed of a longitudinal row of upright and abutting press frames each comprising:

upper and lower traverses respectively having lower and upper traverse faces;

two upright tie bolts extending vertically between the upper and lower traverses and securing the lower traverse to the upper traverse;

upper and lower relatively thin press platens carried on and between the traverses and having respective upper and lower platen faces respectively confronting the lower and upper traverse faces, the belt to be joined or repaired being directly engageable between the platens;

respective upper and lower relatively thick and rigid pressure plates operatively engaged between the platen faces and the respective traverse faces;

means including respective upper and lower heaters provided on the pressure plates for heating same; and

hydraulic actuating means engaged between the upper traverse and the upper pressure plate and vertically expansible for displacing the upper pressure plate down and thereby pressing the platens against the belt engaged therebetween.

4,554,044

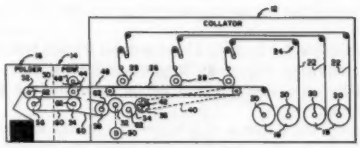
COLLATING APPARATUS WITH ADJUSTABLE GEAR

Richard A. Gaspar; Donald G. Bastian, both of Centerville, and Timothy L. Denlinger, Dayton, all of Ohio, assignors to Harris Graphics Corporation, Melbourne, Fla.

Filed Mar. 7, 1984, Ser. No. 587,093

Int. Cl.[4] B32B *31/18*

U.S. Cl. 156—510 **7 Claims**



1. In a collating apparatus of the type including collating means for unwinding webs from a plurality of rolls mounted on spaced spindles and joining the webs in overlapping relation, perforating means for receiving joined webs from said collating means and forming uniformly spaced cross perforations thereon, and folding means for receiving joined and perforated webs from said perforating means and fan folding the webs at certain cross perforations thereon,

said apparatus including a main drive gear and gear means, meshing with and driven by said main drive gear, and connected to said collating means, said perforating means and said folding means, said gear means having an improved adjustable gear comprising:

a support shaft rotatably mounted on said collating apparatus;

a cylindrical inner hub having a bore therethrough concentric with a periphery thereof and adapted to receive said shaft therethrough in nonrotatable engagement therewith;

a cylindrical intermediate hub having a bore therethrough eccentrically positioned relative to said intermediate hub and shaped to receive said inner hub in rotatable engagement therewith;

a gear ring having a substantially circular periphery and a hole therethrough eccentrically positioned relative to said gear ring periphery and shaped to receive said intermediate hub in rotatable engagement therewith; and

clamp means attached to said gear ring, releasably attached to said shaft, and adjustably attached to said intermediate hub such that

(a) said gear ring may be rotated relative to said intermediate hub by adjustment of said adjustable attachment to displace a geometric center of said gear ring periphery from an axis of rotation of said shaft and thus to impart a predetermined eccentricity to said adjustable gear, and

(b) said intermediate hub may be rotated relative to said inner hub by adjustment of said releasable attachment

to selectively vary a phase orientation of said predetermined eccentricity relative to said main drive gear and the re-

mainder of said gear means, thereby compensating for inherent eccentricities therein.

4,554,045

METHOD FOR PRODUCING METAL SILICIDE-SILICON HETEROSTRUCTURES

John C. Bean, New Providence, N.J.; Kin-Chung R. Chiu, Mountain View, Calif., and John M. Poate, Summit, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 156,649, Jun. 5, 1980, Pat. No. 4,492,971.
This application Nov. 29, 1982, Ser. No. 445,014
Int. Cl.⁴ C30B *25/14*
U.S. Cl. 156—613 **9 Claims**

1. A method for forming a silicon-metal silicide heterostructure comprising essentially monocrystalline silicide grown epitaxially on a single crystal silicon substrate, the method comprising:

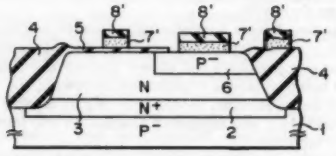
exposing the substrate to a vapor comprising silicon and a silicide forming metal while heating the substrate to a temperature in the range of 550–850 degrees C., thereby reacting in situ the metal as it deposits and silicon to form a metal silicide essentially single crystal layer, leaving at least a portion of the substrate with said essentially single crystal metal silicide layer thereover.

4,554,046

METHOD OF SELECTIVELY ETCHING HIGH IMPURITY CONCENTRATION SEMICONDUCTOR LAYER

Minoru Taguchi, Oomiya, and Gen Sasaki, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Sep. 19, 1984, Ser. No. 652,178
Claims priority, application Japan, Sep. 22, 1983, 58-175367
Int. Cl.⁴ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—637 **8 Claims**



1. A method for selectively etching a high impurity concentration semiconductor layer, comprising the step of:

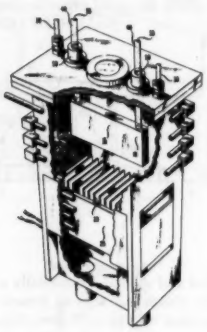
selectively removing a high impurity concentration semiconductor layer which is provided directly or through another layer on a semiconductor substrate by exposing the layer to an aqueous solution of a hydrogen fluoride-nitric acid-acetic acid-based etching solution while the layer is subjected to ultrasonic-vibration.

4,554,047

DOWNSTREAM APPARATUS AND TECHNIQUE

Joel M. Cook, Union Township, Hunterdon County; Daniel L. Flamm, Chatham Township, Morris County, both of N.J.; Edward H. Mayer, North Andover, Mass., and Bernard C. Seiler, Kingston, N.H., assignors to AT&T Bell Laboratories, Murray Hill and AT&T Technologies, Berkeley Heights, both of, N.J.

Filed Oct. 12, 1984, Ser. No. 660,048
Int. Cl.⁴ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—643 **9 Claims**



1. A process for fabricating a device including the procedure of removing material from a plurality of substrates comprising the steps of producing reactive species in a plasma and directing said species to said substrate and subsequently into an effluent wherein said substrate is disjoint from and not surrounded by said plasma CHARACTERIZED IN THAT the volume of said plasma is at least 200 percent as large as the volume occupied by said substrates, and the concentration of said etchant species measured in said effluent in the absence of said substrates is at least 25 percent of the concentration of said species at the periphery of said plasma.

4,554,048

ANISTROPIC ETCHING

Ajit S. Manocha, Allentown, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 17, 1984, Ser. No. 661,613
Int. Cl.⁴ H01L *21/306*; B44C *1/22*; C03C *15/00*; C23F *1/02*
U.S. Cl. 156—643 **5 Claims**

1. A lithographic process comprising,

applying a resist material to a substrate,

patterning the resist by a lithographic patterning step,

placing the substrate in a dry etching apparatus,

exposing the substrate to a reactive gas plasma at an electric power level below the level at which effective etching of the substrate occurs, and continuing that exposure for a period sufficient to harden the patterened resist, and

exposing the substrate, without interruption, to the same plasma adjusted at a power level sufficient to effect etching of the substrate.

4,554,049
SELECTIVE NICKEL STRIPPING COMPOSITIONS AND METHOD OF STRIPPING

Edwin W. Bastenbeck, Plymouth, Conn., assignor to Enthone, Incorporated, West Haven, Conn.

Filed Jun. 7, 1984, Ser. No. 618,159
Int. Cl.[4] C09K *13/04, 13/06;* **C23F** *1/00;* **C23G** *1/08*
U.S. Cl. 156—656 **16 Claims**

1. An aqueous solution for selectively stripping electrolytic nickel and low phosphorous electroless nickel from a ferrous metal substrate comprising, in grams/liter:

(a) Sulfamate ions (calculated as OSO_2NH_2) in an amount about 25 to saturation;

(b) Nitrate ions in an amount about 1 to 25;

(c) Chloride ions in an amount about 0.1 to 8;

(d) Hydrogen peroxide in an amount about 30 to 250; and

(e) An iron complexing agent in an amount about 2 to 60.

13. A method for selectively stripping nickel sulfidation compounds from nickel-base alloy substrates comprising:

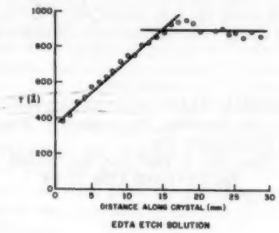
(a) contacting the deposit on the alloy substrate with the solution of claim 1; and

(b) continuing the contacting until the deposit is selectively removed from the substrate surface.

4,554,050
ETCHING OF TITANIUM

William J. Minford, Lehigh Township, Northampton County; Edmond J. Murphy, Bethlehem, and Trudie C. Rice, North Whitehall Township, Lehigh County, all of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 16, 1984, Ser. No. 631,298
Int. Cl.[4] C23F *1/02;* **B44C** *1/22;* **C03C** *15/00, 25/06*
U.S. Cl. 156—664 **7 Claims**



1. Technique for etching titanium comprising the steps of: exposing a titanium surface to a solution comprising the ethylenediaminetetraacetic acid radical for a period sufficient to etch said surface.

4,554,051
FIBER LENGTH INDICATING APPARATUS AND METHOD

Donald W. Danforth, Andover, Mass., assignor to Bolton-Emerson, Inc., Lawrence, Mass.

Continuation of Ser. No. 361,300, Mar. 14, 1982, abandoned. This application May 16, 1984, Ser. No. 610,680
Int. Cl.[4] D21D *1/20;* **G01N** *11/06, 15/02*
U.S. Cl. 162—49 **19 Claims**

9. On line apparatus for periodic testing of the length of fibers in paper stock or pulp flowing in a paper making system while pressurized, undiluted and at paper making consistencies, and of predetermined relative length said apparatus comprising:

an upstanding container having a lower end connected into said paper making system to receive said stock, or pulp, at operating consistency, pressurized, undiluted, and of predetermined relative fiber length the interior of said container being thereby incorporated into said paper making system;

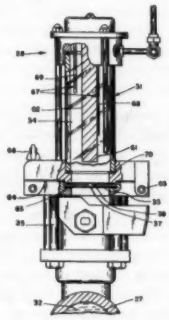
an orifice plate mounted across the interior of said container, intermediate of the height thereof to form a measuring chamber thereabove, said plate being imperforate except for at least one orifice therethrough and up to about five identical said orifices therethrough each with a rim extending therearound, each said orifice being circular in configuration and of predetermined area with a diameter substantially equal to the predetermined relative length of said stock, or pulp, in said system, the diameter of said circular orifice being in the range between 1 mm and 20 mm;

liquid level sensing means in said measurement chamber for sensing liquid level reached therein by said undiluted stock, or pulp, at operating consistency;

automatic control means including a cycle timer operably connected to said measurement chamber for periodically cycling said chamber through intake, measure and exhaust, and establishing a set intake time for said predetermined relative fiber length;

means for periodically and instantaneously generating a signal representing relative fiber length in stock, or pulp, in said paper stock, or pulp system;

said control means including said means for generating a signal for signalling fiber length sensed during each said cycle.



15. The on line method of automatically, periodically testing the length of fibers in refined, or unrefined, paper fiber slurry while in a paper making system and while pressurized, undiluted at operating consistencies and of predetermined relative fiber length, by means of a standpipe connected into said system, the standpipe having an orifice plate extending across the interior thereof with at least one circular orifice therein, and obtaining an instantaneous read out of said fiber length, said method comprising the steps of:

selecting as said plate of imperforate material having at least one circular orifice and up to about five identical said orifices, each of predetermined area and diameter substantially equal to the predetermined relative length of the fibers in said system, said diameter being in the range of 1 mm to 20 mm;

connecting said standpipe on line into said system for an intake, measure and exhaust cycle wherein said slurry must pass from said system through said circular orifice into a measurement chamber;

establishing a set intake time for measurement in said chamber for the said predetermined relative length of fibers;

measuring during each intake cycle, in comparison with said set intake time, whether said slurry passes through said orifice into said measurement chamber, in a predetermined volume or to a predetermined height therein;

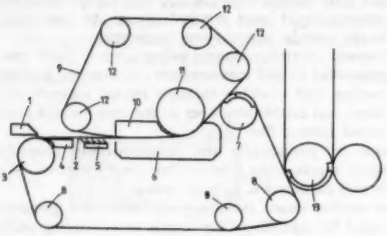
and periodically, instantaneously generating a signal representing the relative fiber length in said slurry.

4,554,052

METHOD AND APPARATUS FOR WEB FORMING

Tapio Waris, Kyminlinna, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Continuation of Ser. No. 415,227, Sep. 7, 1982, abandoned. This application Jul. 2, 1984, Ser. No. 626,549
Claims priority, application Finland, Sep. 29, 1981, 813027
Int. Cl.[4] D21F *3/04, 9/02, 11/02*
U.S. Cl. 162—203 5 Claims



1. A web forming method which consists of feeding a fiber suspension from a head box on a section of a lower forming wire comprising a first, substantially horizontal dewatering zone, covering the web with an upper wire, leading the lower wire and the upper wire with the web therebetween to a second dewatering zone, which is a twin dewatering zone upwardly over a deflecting member having a large radius of curvature, said deflecting member being impervious to water, removing the water from the web in the first and second dewatering zone through only said lower wire, deflecting the web in a substantially straight path upwardly in a direction which deviates from the horizontal original direction of travel of the web, by an angle less than 90° up to a suction roll, said deflecting member being located in the upper wire, then detaching the upper wire from the web, causing said upper wire to continue to travel beyond the suction roll upwardly in essentially the same direction as it was upstream of said suction roll, and removing the web from the lower wire.

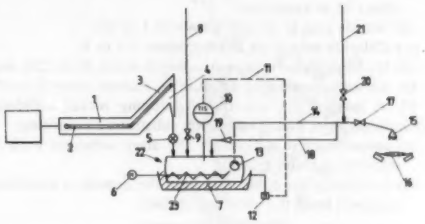
3. An apparatus for forming a web from a fiber suspension comprising a lower wire loop, a head box for feeding the fiber suspension onto said lower wire loop, at least one dewatering member having a curved impervious surface with a large radius of curvature inside the loop, said wire loop having a first horizontal section, an upper wire disposed to cover the web located over the lower wire, guide rolls being located inside the upper wire, means for moving said upper and lower wires with the web therebetween to a deflecting member, said deflecting member being impervious to water and having a large radius of curvature, and being located in the upper wire, wherein the direction of travel of the web and the wires is deflected upwards by an angle smaller than 90° to travel upwardly in a substantially straight path, a suction roll arranged within the lower wire, means for detaching the upper wire from the web downstream of the suction roll, said guide rolls leading said upper wire upwardly essentially in the same direction as it was upstream of the suction roll, the radius of curvature of said deflecting member being equal to or greater than the radius of curvature of said guide rolls, and means for detaching the web from the lower wire.

4,554,053

METHOD AND DEVICE FOR REMOVAL OF HEAVY TAR FROM A COKE-OVEN GAS DURING COOLING

John Rizzon; Günter Adomat, and Peter Diemer, all of Essen, Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Nov. 18, 1983, Ser. No. 553,476
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1983, 3247390
Int. Cl.[4] C10B *55/00*
U.S. Cl. 201—21 5 Claims



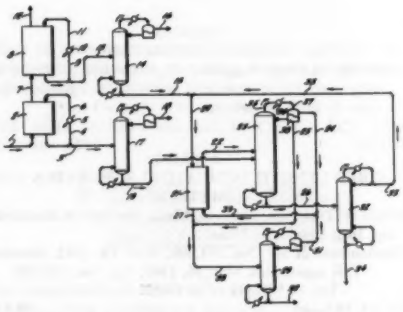
1. A method of removing heavy tar produced in a coke oven during the cooling of a coke oven gas from the coke-oven gas, comprising the steps of crushing coarse pieces of the heavy tar so as to obtain particles having a size of ≦1 mm; rarefying said particles in a mixer by adding to said particles a mixture of tar and water to obtain a heavy tar-tar-water mixture; providing heating means in said mixer and heating the obtained mixture in said mixer and maintaining the temperature of said mixture in said mixer between 55° and 75° C. during the rarefying step to obtain a uniform distribution of the tar particles in said mixture; and then conveying the thus heated heavy tar-tar-water mixture to a raw charge coal disposed on a raw coal conveyor belt.

4,554,054

METHACRYLIC ACID SEPARATION

Robert W. Coyle, Horsham, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Dec. 9, 1983, Ser. No. 560,084
Int. Cl.[4] B01D *3/36, 11/04*
U.S. Cl. 203—15 5 Claims



1. A process for separating methacrylic acid from a methacrylic acid-containing gaseous effluent which comprises:

(a) feeding the gaseous effluent to a first-stage partial condenser wherein the effluent is brought into direct contact with a part of the condensed liquid previously obtained in the condenser, said condenser being at a temperature in the range of from about 16° to 70° C., whereby a portion of the methacrylic acid and water vapor in the effluent are condensed to form a relatively concentrated aqueous

methacrylic acid liquid stream and whereby a substantial portion of the methacrylic acid and water vapor leaves the first-stage condenser in the vapor phase along with non-condensible gases and the major portion of methacrolein contained in the effluent;

(b) feeding the vapor phase, leaving the first-stage condenser, to a second-stage condenser where the vapor is brought into direct contact with a part of the condensed liquid obtained in the second-stage condenser, said second stage condenser being at a temperature equal to or less than that of the first-stage condenser whereby most of the methacrylic acid and a large portion of the water contained in the vapor feed are condensed to form an aqueous methacrylic acid liquid stream that is less concentrated in methacrylic acid than is the liquid leaving the first-stage condenser;

(c) feeding a liquid stream from the first-stage condenser to a first distillation column where methacrolein is removed as an overhead product;

(d) feeding a liquid stream from the second-stage condenser to a second distillation column where methacrolein is removed as an overhead product;

(e) extracting the stream from the bottom of the second distillation column, described in step d, with a suitable solvent to form an organic phase;

(f) feeding both the organic phase from the extractor and the liquid from the bottom of the first distillation column described in step c, to a third distillation column wherein solvent and water dizeotrope are removed overhead and methacrylic acid is removed from bottom of the column.

5. A process for separating acrylic acid from an acrylic acid-containing gaseous effluent which comprises:

(a) feeding the gaseous effluent to a first-stage partial condenser wherein the effluent is brought into direct contact with a part of the condensed liquid previously obtained in the condenser, said condenser being at a temperature in the range of from about 16° to 70° C., whereby a portion of the acrylic acid and water vapor in the effluent are condensed to form a relatively concentrated aqueous acrylic acid stream and whereby a substantial portion of the acrylic acid and water vapor leaves the first-stage condenser in the vapor phase along with non-condensible gases and the major portion of acrolein contained in the reactor effluent;

(b) feeding the vapor phase, leaving the first-stage condenser, to a second-stage condenser where the vapor is brought into direct contact with a part of the condensed liquid obtained in the second-stage condenser, said second stage condenser being at a temperature equal to or less than that of the first-stage condenser whereby most of the methacrylic acid and a large portion of the water contained in the vapor feed are condensed to form an aqueous acrylic acid solution that is less concentrated in acrylic acid than is the liquid leaving the first-stage condenser;

(c) feeding a liquid stream from the first-stage condenser to a first distillation column where acrolein is removed as an overhead product;

(d) feeding a liquid stream from the second-stage condenser to a second distillation column where acrolein is removed as an overhead product;

(e) extracting the stream from the bottom of the second distillation column, described in step d, with a suitable solvent to form an organic phase;

(f) feeding both the organic phase from the extractor and the liquid from the bottom of the first distillation column, described in step c, to a third distillation column wherein solvent and water azeotrope are removed overhead and acrylic acid is removed from bottom of the column.

4,554,055

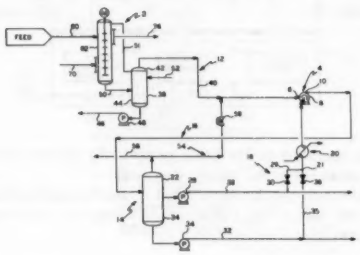
SOLVENT RECOVERY

Patrick Rooney, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 7, 1983, Ser. No. 472,819

Int. Cl.⁴ B01D *3/10, 3/12;* **C10G** *21/28*

U.S. Cl. 203—89 **14 Claims**



1. A process comprising:

separating a mixture comprising water, a heavy organic component and a solvent for the heavy organic component into a gas phase containing predominantly the solvent for the heavy organic component and water and a liquid phase containing predominantly the heavy organic component by an evaporative process;

compressing the gas phase with liquid medium formed from a cool liquid recycle stream as below defined to liquefy a major portion of said gas phase;

combining the liquefied portion of the gas phase with the liquid medium;

phase separating from the combined liquids a first liquid phase and a second liquid phase; and

withdrawing a portion of one of the first liquid phase and the second liquid phase as the recycle stream.

10. Apparatus comprising:

(a) an evaporator vessel;

(b) a vacuum pump having a first inlet, a second inlet, and an outlet;

(c) a first means for forming a flow path extending between the first inlet of the vacuum pump and the evaporator vessel;

(d) a first settler vessel;

(e) a second means for forming a flow path extending between the outlet of the vacuum pump and the first settler vessel; and

(f) a third means for forming a flow path extending between an upper portion of the first settler vessel and the second inlet of the vacuum pump; and

(g) a means for cooling the contents of the third means.

4,554,056

IMPREGNATION OF NICKEL ELECTRODES USING ELECTRIC PH CONTROL CIRCUITS

James C. Whitford, Webb City, Mo., assignor to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Filed Apr. 18, 1985, Ser. No. 724,403

Int. Cl.⁴ C25B *1/16;* **C25D** *9/08*

U.S. Cl. 204—2.1 **19 Claims**

1. A process for impregnating a porous plaque with nickel hydroxide in a bath containing a soluble source of a nickel salt, comprising,

operating two electric circuits in said bath to impregnate at least one such plaque,

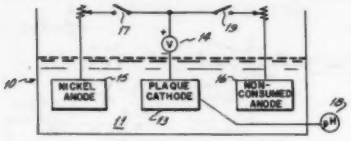
one of said two circuits comprising a consumable nickel anode, a cathode, and a source of current,

the other of said two circuits comprising an inert anode, a cathode, and a source of current,

the plaque to be impregnated being at least one of said cathodes,

at least one of said circuits being operated under conditions to impregnate said plaque,

the operation of said one circuit tending to cause pH in the bath to increase,



the operation of the other of said two circuits tending to cause pH in the bath to decrease,

the two circuits being operated at rates to maintain the pH of said bath within a desired acidic range for said impregnation.

4,554,057

PROCESS FOR MANUFACTURING SUPPORT MATERIALS FOR OFFSET PRINTING PLATES

Dieter Mohr, Roemerberg, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 14, 1983, Ser. No. 466,083

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1982, 3206470

Int. Cl.⁴ C25D *11/12;* **B41N** *1/08*

U.S. Cl. 204—29 **7 Claims**

1. A process for manufacturing support materials for offset-printing plates, comprising the step of:

subjecting a support member comprised of aluminum or an alloy thereof, which has been roughened by chemical, mechanical and/or electrochemical treatment, to a two-stage anodic oxidation treatment including a first stage (a) comprising anodic oxidation in an aqueous electrolyte consisting essentially of sulfuric acid and Al^{3+}ion, and thereafter to a second stage (b) comprising anodic oxidation in an aqueous electrolyte consisting esstentially of a salt comprising an alkali metal cation, an alkaline earth metal cation or an ammonium cation, and a phosphoroxo anion, a phosphorofluoro anion or a phosphoroxofluoro anion, at a voltage between about 10 and 100 V, at a temperature of from about 10° to 80° C., and for a duration of from about 1 to 60 seconds.

4,554,058

ELECTROLYTIC PRODUCTION OF PRECIOUS METALS

Kenneth P. V. Lei, Sparks; Judith A. Eisele, Verdi, and Gene E. McClelland, Sparks, all of Nev., assignors to The United States of America as represented by the Secretary of Interior, Washiongton, D.C.

Filed Mar. 11, 1985, Ser. No. 710,759

Int. Cl.⁴ C25C *1/20*

U.S. Cl. 204—110 **15 Claims**

1. A simple one-step economic process for the desorption of a precious metal complex from carbon that has been loaded with the precious metal complex and conversion of the precious metal complex to the precious metal, comprising,

(a) forming an anode with the loaded carbon on which is absorbed the precious metal complex in an electrolytic cell containing an electolyte and a cathode, and

(b) passing an electric current through said cell thereby resulting in the deposition of the precious metal on said cathode.

4,554,059

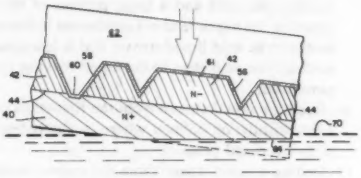
ELECTROCHEMICAL DIELECTRIC ISOLATION TECHNIQUE

John P. Short, Indian Harbour Beach; Craig J. McLachlan, Melbourne Beach; Charles Messmer, Palm Bay, and Paul S. Reinecke, Indialantic, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 548,631, Nov. 4, 1983, abandoned. This application Dec. 4, 1984, Ser. No. 678,075

Int. Cl.⁴ C25F *3/12*

U.S. Cl. 204—129.3 **22 Claims**



1. A method of fabricating dielectrically isolated islands including:

forming a second layer of semiconductor material on a first layer of semiconductor material, said first layer having a lower resistivity than said second layer;

etching said second layer to form first moats extending down from a first surface of said second layer and terminating in said first layer and second moats extending down from said first surface and terminating within said second layer;

forming a dielectric layer on said first surface of said second layer and said moats;

forming a support layer on said dielectric layer resulting in a composite structure;

continuously moving said composite structure into an etchant bath and biasing said first layer and said bath to electrochemically etch said first layer to its interface with said second layer and said dielectric layer of said first moats; and

polishing said second layer and said dielectric layer down to a plane which exposes said support layer in said first and second moats using exposed portions of said first moats as a reference plane.

4,554,060

PHOTOLYTIC SEPARATION OF ISOTOPES IN CRYOGENIC SOLUTION

Samuel M. Freund, Santa Fe; William B. Maier, II, Los Alamos; Redus F. Holland, Los Alamos, and Willard H. Beattie, Los Alamos, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

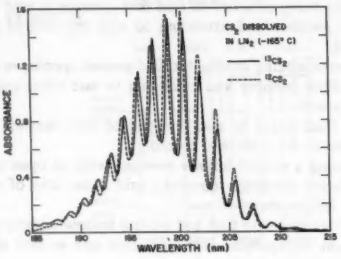
Filed Aug. 23, 1979, Ser. No. 69,151

Int. Cl.⁴ B01D *59/00*

U.S. Cl. 204—157.1 R **2 Claims**

1. A process for seperating isotopes, which comprises the steps of: (a) forming a solution of carbon disulfide in a solvent selected from the group consisting of liquefied nitrogen, krypton, argon, and mixtures thereof at a temperature such that the absorption spectrum of said carbon disulfide is sufficiently well-defined that the spectroscopic features corresponding to the different isotopes of the element can be distinguished, and few interfering solvent absorptions occur, (b) irradiating said solution with monochromatic radiation selected from wavelengths included in the visible and ultraviolet regions of the electromagnetic spectrum which selectively, or at least preferentially, dissociates those molecules of said carbon disulfide containing one of the desired isotopes of the element forming at least one dissociation product containing said desired isotope of the element, said monochromatic radiation being sup-

plied from a radiation source emitting near a dissociative spectroscopic feature of said desired isotope containing carbon disulfide molecules in their gaseous for, the requisite coincidence between said monochromatic radiation and said dissociative spectroscopic feature to achieve said preferential dissociation being obtained by choosing the appropriate solvent, said solvent causing a displacement of said dissociative spectroscopic feature, and (c) subjecting said at least one dissociation product containing said desired isotope of the element to physical or chemical processes or a combination thereof, whereby said desired isotope contained in said at least one dissociation product is separated from other isotopes of the same element contained in the undissociated molecules of said carbon disulfide in said solution.



4,554,061

ANODIC ELECTRODEPOSITION OF CHARGED AQUEOUS POWDER SLURRY

Robert J. Ritchie, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 18, 1982, Ser. No. 435,031

The portion of the term of this patent subsequent to May 28, 2002, has been disclaimed.

Int. Cl.[4] C25D *13/06, 13/10;* **B05D** *7/26*

U.S. Cl. 204—181.6 **10 Claims**

1. A process for the preparation of an aqueous coating bath to be used in an electrodeposition process wherein aqueous powder slurry of particles of polymer powder having an average particle size measured optically of not more than about 20 μm is mixed with a solution of metal salt which can convert to amphoteric metal oxide or hydroxide at a pH at which precipitation does not occur, and then the pH is lowered to a level which causes precipitation of such amphoteric metal oxide or hydroxide onto said particles of polymer powder.

2. An electrocoating process for the electrodeposition of paint on an anodic surface wherein an aqueous coating bath prepared by the process of claim **10** containing said paint is provided with a negatively charged cathode and with a positively charged anode which is to be coated with said paint,

the solids content of said paint consisting essentially of particles of a polymer powder having an average particle size measured optically of not more than about 20 μm, said particles being coated with amphoteric metal oxide or hydroxide precipitated or adsorbed thereon in an amount sufficient to cause said particles to migrate toward said anode under the influence of said charge,

the pH of said bath being in a range above the isoelectric point such that the zeta potential of said coated particles is at least about as negative as minus 35 millivolts,

said electrocoating process comprising the steps of applying a voltage between said anode and said cathode to cause said paint to be deposited on the anode, separating the anode from the bath, and drying and curing the paint deposited on the anode.

4,554,062

MACHINE FOR THE CONTINUOUS GOLD-PLATING OF CONTACT TABS

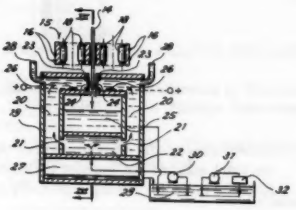
Sala Sergio, Trezzo Sull'Adda, Italy, assignor to Telmec SPA, Milan, Italy

Filed Jun. 22, 1984, Ser. No. 623,427

Claims priority, application Italy, Jun. 23, 1983, 21764 A/83; Feb. 29, 1984, 21052/84[U]

Int. Cl.[4] C25D *17/02, 17/10, 17/28*

U.S. Cl. 204—206 **12 Claims**



1. A machine for the continuous gold-plating of contact tabs connected to conductor tracks of printed circuit boards and the like, comprising a plurality of chemically and electrochemically acting cells conveniently of modular structure aligned in sequential order, through which the printed circuit to be gold-plated is conveyed by conveyor members in endless configuration which effects the electrical connection of said contact tabs to the negative pole of the circuit, each of said cells being provided with one or more feed chambers for feeding the electrochemical bath, at least one collection tank and at least one liquid-loss recovery chambers, there being a cascade flow area through which the portion of the printed circuit boards bearing said contact tabs passes, said conveyor members consisting of two endless belts constructed of deformable material which are tensioned between two pairs of rotating rollers, two parallel sides of said belts being placed at a distance adapted to receive, with deformation of said belts, said printed circuit boards, supporting its weight by friction, there being present on each of the belts one or more bare wires which are in endless configuration and tensioned between two pairs of rollers, these being kept in contact with the conductor tracks of said printed circuit boards by the pressure brought to bear between the belts and the printed circuit boards, the conductor tracks being connected to the negative pole of the electric circuit of the cell by pressure-brushes or the like.

4,554,063

CATHODIC, GAS- AND LIQUID-PERMEABLE CURRENT COLLECTOR

Moritz Braun, Zollikerberg; Anna Kaufmann, Bülach, and Edwin Müller, Zürich, all of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed May 3, 1984, Ser. No. 606,477

Claims priority, application Switzerland, May 6, 1983, 2482/83

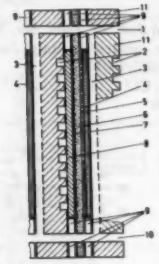
Int. Cl.[4] C25B *9/00*

U.S. Cl. 204—254 **21 Claims**

1. A cathodic gas and liquid-permeable current collector comprising:

a pulverulent carrier material comprising graphite powder

and carbon fibers wherein the mass ratio of graphite powder:carbon fibers is between 10:1 and 30:1, and



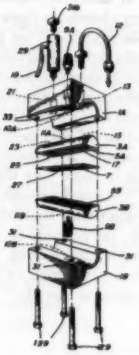
a binder, wherein the mass fraction of the binder relative to the total mass of the current collector is between 4 and 20% the collector having a porosity of 40 to 70%.

4,554,064

DUAL WORKING-ELECTRODE ELECTROCHEMICAL DETECTOR FOR HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

Sam A. McClintock, Hudson, and William C. Purdy, Montreal, both of Canada, assignors to Imasco-CDC Research Foundation, Toronto, Canada

Filed Mar. 28, 1984, Ser. No. 594,361
Int. Cl.[4] G01N *27/30, 31/08*
U.S. Cl. 204—411 **6 Claims**



1. A dual working-electrode electrochemical detector for measuring characteristics of a biological fluid, comprising:

a first working electrode;

a second working electrode;

means for holding the two electrodes in close, opposed parallel relationship;

spacer means between said first and second electrodes for maintaining said electrodes in spaced relationship;

means forming a channel for the flow of said fluid between said electrodes;

feed means for feeding fluid to one end of said channel; and

retrieval means for retrieving fluid from the other end of said channel;

potentials applied to said electrodes being separately controllable whereby said electrodes can be held at different potentials;

wherein said means for holding said electrode comprises a first hollow member having an open side, said first electrode covering said open side of said first hollow member;

a first opening extending through said first hollow member to one end of said channel;

a second opening extending through said first hollow member to the other end of said channel;

a first opening in said first electrode being aligned with said first opening in said first hollow member;

a second opening in said electrode being aligned with said second opening in said first hollow member;

feed means being attached to said first opening in said first hollow member and extending to said one end of said channel;

retrieval means being attached to said second opening in said first hollow member and extending to said other end of said channel;

whereby fluid is fed to said one end of said channel and retrieved at the other end thereof;

and including a second hollow member with an open side, said second electrode covering said open side of said second hollow member; and

means for holding said first and second hollow members in fluid-tight engagement with said first and second electrodes facing each other;

wherein said means for holding comprises a first yoke disposed over said first hollow member and a second yoke disposed over said second hollow member;

said first yoke having a first opening aligned with the first opening of said first hollow member and a second opening aligned with the second opening in said first hollow member.

4,554,065

ISOMERIZATION PROCESS TO PRODUCE LOW POUR POINT DISTILLATE FUELS AND LUBRICATING OIL STOCKS

Kenneth R. Albinson, Audubon, and Jonathan E. Child, Sewell, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 3, 1984, Ser. No. 606,499
Int. Cl.[4] C10G *65/10, 65/12*
U.S. Cl. 208—59 **20 Claims**

1. A process for dewaxing a hydrocarbon feedstock with a relatively high pour point and containing paraffins selected from the group of normal paraffins and slightly branched paraffins which comprises

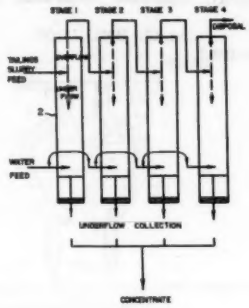
(a) subjecting said feedstock to catalytic dewaxing at catalytic dewaxing conditions including a temperature of 200° to 500° C., pressure from atmospheric to 25,000 kPa, the presence of 20 to 4,000 nll^{-1} of hydrogen per volume of liquid feed, and a liquid hourly space velocity of 0.1 to 10 $hr.^{-1}$ by passing said feedstock, along with hydrogen, over a dewaxing catalyst comprising zeolite beta having a noble metal hydrogenation/dehydrogenation component to produce a partially dewaxed product and

(b) subjecting said partially dewaxed product to catalytic dewaxing at catalytic dewaxing conditions including a temperature of 200° to 500° C., and pressure from atmospheric to 25,000 kPa, the presence of 20 to 4,000 nll^{-1} of hydrogen per volume of liquid feed, and a liquid hourly space velocity of 0.1 to 10 $hr.^{-1}$ by passing said partially dewaxed product over catalyst comprising zeolite beta having a base metal hydrogenation/dehydrogenation component comprising at least one non-noble metal of Group VIA or VIIIA to recover a substantially dewaxed product as a product of the process.

4,554,066
DENSITY CLASSIFICATION OF PARTICULATE MATERIALS BY ELUTRIATION METHODS AND APPARATUS

David M. Turbitt, Apt. #3, 141 King St., East, and James F. Archibald, 12 Glenwood Ct., both of Kingston, Ontario, Canada

Filed Jan. 4, 1984, Ser. No. 568,093
Int. Cl.[4] B03B 7/00
U.S. Cl. 209—3 9 Claims



1. A process for separating desired particulate high density materials from associated particulate lower density materials, comprising passing the particulate high and lower density materials through a series of elutriation columns through which an appropriate medium flows to produce underflow and overflow, with the overflow from each column being introduced to the next elutriation column in the series, the flow rate of the medium in each column being substantially plug flow and a decrease from that of the previous column and selected to have desired materials of decreasing size being contained in the underflow from each column.

4,554,067
SEED TREATING MACHINE

Yoshiro Arimitsu, Lompoc, Calif., assignor to John Bodger & Sons Co., El Monte, Calif.

Continuation of Ser. No. 560,127, Dec. 12, 1983, abandoned. This application Feb. 19, 1985, Ser. No. 703,084
Int. Cl.[4] B07B 4/00
U.S. Cl. 209—136 3 Claims

1. A seed treating machine for separating seeds from the lighter ingredients of a mixture of plant matter that includes said seeds, said machine comprising:

a horizontally pivotable table centrally formed with an opening, and provided with a peripheral wall, with a discharge chute for the seeds beig formed in said wall at one end of the table;

a screen over said opening;

power-operated fan means for directing an air blast upwardly through said opening;

an open-sided cover over said opening, the bottom of said cover being spaced above said table; and

whereby when said plant matter is deposited on said table over said screen and the table is rocked, the cover contains the ingredients of the mixture as they are lifted by said air blast through the opening in said table, the seeds falling onto the table for removal therefrom as the lighter ingredients are blown into the atmosphere out of the open side of the cover.

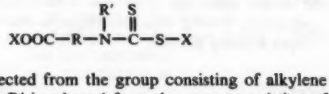
4,554,068
ORE FLOTATION AND FLOTATION AGENTS FOR USE THEREIN

Kenneth B. Kimble; Harold W. Mark, and Clarence R. Bresson, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 517,297, Jul. 26, 1983,. This application Dec. 13, 1984, Ser. No. 681,404
Int. Cl.[4] B03D 1/14
U.S. Cl. 209—167 4 Claims

1. A process for recovering minerals comprising:

(a) mixing crushed ore containing said minerals, water, and a dithiocarbamate having the formula



wherein R is selected from the group consisting of alkylene radicals, wherein R′ is selected from the group consisting of hydrogen and methyl and ethyl radicals, wherein X is selected from the group consisting of alkali metal atoms, to establish a pulp;

(b) aerating said thus established pulp to produce a froth containing a first portion of said minerals while allowing a second portion of said minerals comprising metal minerals to be suppressed in said pulp; and

(c) recovering said first portion of said minerals from said thus produced froth and recovering said thus suppressed minerals from said pulp.

4,554,069
PRESSURE REGULATOR

James D. Aid, St. Petersburg, and Edward R. Lindsay, Clearwater, both of Fla., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Oct. 30, 1980, Ser. No. 202,390
Int. Cl.[4] B01D 31/00
U.S. Cl. 210—101 7 Claims

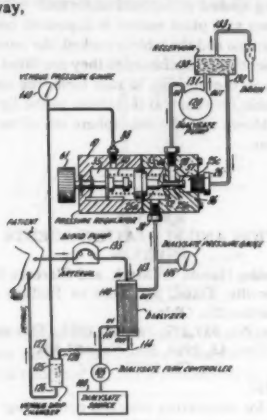
1. A transmembrane pressure regulator comprising an upper housing portion and a lower housing portion separated from each other by a rolling diaphragm,

said upper housing portion having a first interiorly located cavity connected by first, second, and third separate passageways to the outside of said regulator,

said lower housing portion having a second interiorly located cavity connected by a fourth separate passageway to the outside of said regulator, said diaphragm being secured to said regulator so as to separate said housing portions and to prevent fluid communication between the respective cavities of said housing portions,

means associated with said upper housing portion for biasing said diaphragm in the direction of said lower housing portion, first means associated with said upper housing for regulating the amount of fluid flowing from said first passageway through said first cavity and into said second passageway, second means associated with said upper housing for regulating the amount of liquid flowing from said third

passageway through said first cavity and into said second passageway,



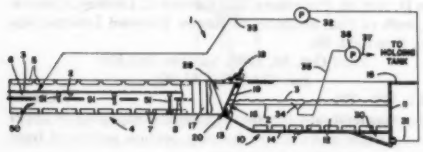
and means associated with said lower housing portion for adjustably biasing said diaphragm in the direction of said upper housing portion.

4,554,070

WEIR-TYPE SKIMMER EMPLOYING A WAVE DIFFUSER

Roland H. Jordan, Redondo Beach, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 29, 1983, Ser. No. 537,462
Int. Cl.⁴ E02B *15/04*
U.S. Cl. 210—109 **5 Claims**



1. A wave diffusing apparatus for collecting oil from the surface of a body of water when used in combination with a skimming apparatus that moves through the body of water, comprising:

a plurality of submerged, serially disposed spaced apart parallel weirs of different height located substantially perpendicular to the line of fluid flow, said series of weirs increasing in height from the point at which a floating layer is first encountered along the direction of the relative fluid flow to form partial barriers to the fluid flow;

means for positioning said weirs in front of a liquid inlet for a skimmer at a predetermined distance below the surface of the body of water; and

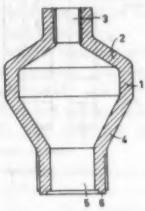
means for adjusting the position, both vertically and angularly, of said weirs in the liquid body.

4,554,071

PRE-COLUMN FOR PRECONCENTRATING SUBSTANCES TO BE CHROMATOGRAPHED AS WELL AS DEVICE FOR A LIQUID CHROMATOGRAPHY SYSTEM AND COUPLING MEMBER FOR SAID DEVICE

Henri M. Ruijten; Hans De Bree; Peter H. Van Amsterdam, and Elbert Wiegers, all of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

Continuation of Ser. No. 488,167, Apr. 25, 1983, abandoned. This application Sep. 7, 1984, Ser. No. 648,358
Claims priority, application Netherlands, Apr. 28, 1982, 8201757
Int. Cl.⁴ B01D *15/08*
U.S. Cl. 210—198.2 **9 Claims**



1. A pre-column of pressure-resistant material, to be used in connection with a separation column, for preconcentrating at elevated pressure substances to be chromatographed, which pre-column comprises a vessel-shaped body, having at its ends means for sealing connections, upstream with respect to an inlet tube for the liquid to be preconcentrated and downstream with respect to the separation column, and further having internally an upstream section converging towards the inlet tube for distributing the liquid to be preconcentrated over the internal cross-section of the body, and a preconcentration section, adapted to include a carrier material suited for preconcentration purposes, characterized in that said preconcentration section for the greater part converges toward the downstream end.

4,554,072

BARGE-BASED OIL BARRIER

Ray R. Ayers, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 27, 1984, Ser. No. 655,394
Int. Cl.⁴ B01D *21/24*
U.S. Cl. 210—242.3 **4 Claims**

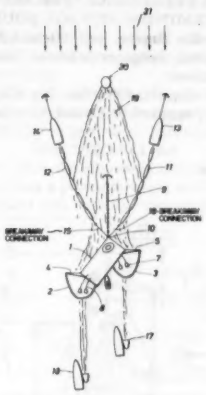
1. An offshore oil spill cleanup system comprising:

a barge arranged downstream of the oil spill to split the flow of the oil spill to either side of the barge;

at least one diversionary boom arranged upstream of the barge and functionable to channel the flow of oil toward the barge;

two containment booms arranged trailing an upstream part of the barge, each boom arranged on an opposite side of the barge to catch the diverted oil, with both booms at least partially sheltered by the barge from direct weather forces, the barge being anchored to have one corner forward of the other corner in relation to the direction of flow of the oil spill, with one containment boom attached to the other front corner of the barge, and the other con-

tainment boom attached to the forward-most rear corner of the barge; and



means associated with the containment booms to remove oil from the booms to the barge.

4,554,073

DEVICE FOR UPTAKE, TRANSPORTATION, AND RECOVERY OF CELL MATERIAL, AND FOR TRANSFER OF THE RECOVERED MATERIAL TO MICROSCOPE SLIDES

Gert Schlüter, and Matthias Zimmermann, both of Gundelfingen, Fed. Rep. of Germany, assignors to Rhodia Aktiengesellschaft, Freiburg, Fed. Rep. of Germany

Filed Mar. 8, 1984, Ser. No. 587,633

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1983, 3310205

Int. Cl.⁴ B01D *27/02*

U.S. Cl. 210—450 **5 Claims**

1. A device for takeup, transportation and recovery of cell material present in body fluids, cell-fixing liquids and mixtures of body fluids and cell-fixing liquids, and also for transfer of recovered cell material onto microscope slides, comprising a vessel with an inlet and an outlet in which

(a) the inlet being adapted to be closed gas-tightly and liquid-tightly with a removable stopper or a removable cap;

(b) a removable fiber element being arranged flush with the wall of the vessel, in the outlet, comprising fibers insoluble in body fluids and cell-fixing liquids, the fibers being arranged lengthwise in the direction of the longitudinal axis of the vessel with the formation of capillaries, the diameter of the capillaries being smaller than the diameter of cells of the cell material, the fiber element being arranged, for a portion of its length, in the outlet;

(c) the fiber element, in the other portion of its length, projecting into a sleeve which, on the side on which the fiber element projects into it, has the same cross-sectional area and the same cross-section as that of the outlet, the fiber element being liquid-tightly and gas-tightly sealed to the sleeve;

(d) the sleeve being adapted to be closed, liquid-tightly and gas-tightly, on the side opposite the fiber element, with a removable stopper or a removable cap.

4,554,074

SEPARATOR FOR IMMISCIBLE FLUID MIXTURE

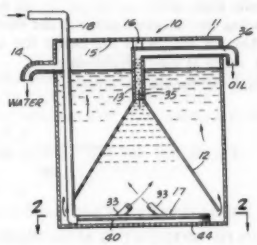
Amos W. Broughton, P.O. Box 505, Temple City, Calif. 91780

Filed Jul. 20, 1984, Ser. No. 633,049

The portion of the term of this patent subsequent to Aug. 2, 2000, has been disclaimed.

Int. Cl.⁴ C02F *1/40*

U.S. Cl. 210—519 **4 Claims**



1. The separator for immiscible fluid mixtures in combination in a separator tank, comprising:

a unitary fluid flat, shallow separator having required width and length dimensions and a single formed plenum chamber having a flat affixed cover with a single inlet channel having a selected channel cross section area, said single inlet channel branching into the first two branch channels having at least aforesaid channel cross section area, said first two branch channels each multiple branching into paired branch channels having at least aforesaid channel cross section area, said multiple branch channels each multiple branching into further outlet channels having at least aforesaid channel cross section area, providing transition of the turbulent inlet fluid flow to substantially laminar fluid flow in said final outlet channels, aforesaid separator disposed on the separator tank base,

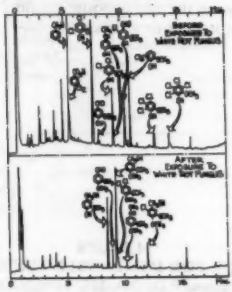
a baffle disposed above and encompassing said unitary fluid flat separator, all said final outlet channels disposed underneath said baffle, said baffle having a narrow outlet aperture providing an outlet for an immiscible fluid less dense than water,

aforesaid tank combination having an immiscible fluid mixture inlet means secured to said inlet channel, an outlet means for a separated water phase, and an outlet means for a separate immiscible less dense than water phase.

4,554,075
PROCESS OF DEGRADING CHLORO-ORGANICS BY WHITE-ROT FUNGI

Hou-min Chang; Thomas W. Joyce, both of Raleigh, N.C.; Thomas K. Kirk, Madison, Wis., and Van-Ba Huynh, Navarre, Minn., assignors to North Carolina State University, Raleigh, N.C.

Filed May 29, 1984, Ser. No. 614,980
Int. Cl.[4] C02F 3/34
U.S. Cl. 210—611 12 Claims



1. A process of degrading chloro-organics contained in certain liquids to improve the environmental character thereof comprising the steps of:

(a) providing a white-rot fungus which is in a secondary metabolic state, and

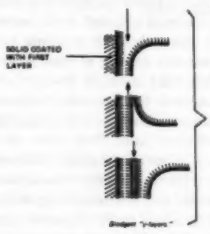
(b) degrading the chloro-organics in the liquid by immersing the white-rot fungus in the liquid for a sufficient time period, while at least periodically

(c) exposing the fungus to oxygen.

4,554,076
METHOD OF MODIFYING MEMBRANE SURFACE WITH ORIENTED MONOLAYERS OF AMPHIPHILIC COMPOUNDS

Lois M. Speaker, Birmingham, Ala., assignor to Georgia Tech Research Corporation, Atlanta, Ga.

Filed Aug. 18, 1982, Ser. No. 409,097
Int. Cl.[4] B01D 31/00
U.S. Cl. 210—639 25 Claims

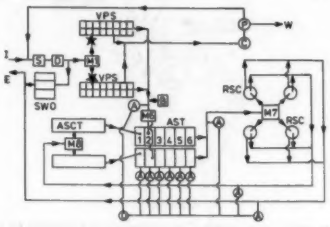


24. A method of preventing the fouling of a semipermeable membrane used for separating dissolved materials from liquids, comprising the step of depositing on the surface of said membrane an oriented monololecular layer of fluorinated pyridinium bromide prior to the use of said surface in said separating.

4,554,077
METHOD AND APPARATUS FOR MONITORING SEWAGE TREATMENT EFFICIENCY AND DETERMINING SEWAGE SOURCES

Leslie Brown; James Braven, and Michael M. Rhead, all of Plymouth, England, assignors to Devon County Council, England, a part interest

Filed Aug. 31, 1983, Ser. No. 528,105
Claims priority, application United Kingdom, Jul. 1, 1983, 8317933
Int. Cl.[4] C02C 1/00
U.S. Cl. 210—656 20 Claims



1. A method of monitoring operational efficiency of a sewage treatment plant having a biodegradation stage, including the steps of:

sampling flow of sewage at least after outlet from said biodegradation stage;

filtering each sample taken;

selecting a single soluble biodegradable compound in the sewage for analysis;

analyzing respective filtered samples to obtain information relating to the concentration of said selected single biodegradable compound therein; and

further determining the effectiveness of the biodegradation stage in reducing the concentration to a desired value of all biodegradable compounds in the sewage based upon the information relating to said selected single biodegradable compound.

4,554,078
METHODS OF AND APPARATUS FOR EFFLUENT DISPOSAL

Ronald G. Huggins, Lawrenceville; William D. O'Brien, Jr., Lilburn, and Fred P. Partus, Marietta, all of Ga., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed May 21, 1984, Ser. No. 612,501
Int. Cl.[4] B01J 14/00
U.S. Cl. 210—749 13 Claims

1. A method of treating a liquid effluent which comprises an air reactive material to provide a disposable material, said method comprising the steps of:

supplying a suitable amount of a solution comprising a treating material which is capable of reacting with the liquid effluent to provide a disposable reaction product;

providing a pressurized gas which is non-reactive with the effluent and the treating material;

subjecting the liquid effluent to a pressure which is at least equal to the pressure of the pressurized gas to cause the effluent to be moved through a tube and to be discharged in a direction along a path from an end of the tube to contact the treating material and react therewith to provide the reaction product; and

causing the effluent to contact the treating material at a predetermined distance from the end of the tube in order to prevent the reaction product from contacting the end of the tube by providing an envelope comprising the pressurized gas along the predetermined distance about the effluent being discharged and by shielding the gas envelope

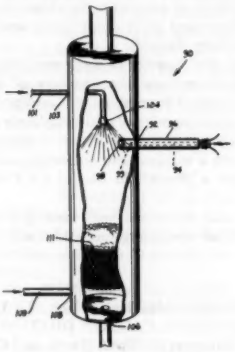
from the treating material, the pressure of the gas being sufficient to maintain the treating material spaced from the end of the tube to avoid the evolution of undesirable vapors.

9. An apparatus for treating a liquid effluent which comprises an air reactive material to provide a disposable product, said apparatus including:

means for supplying a suitable amount of a solution comprising a treating material which is capable of reacting with the liquid effluent to provide a disposable reaction product;

a tube through which the effluent is capable of being moved;

means for providing a pressurized gas which is non-reactive with the effluent and with the treating material;



means for subjecting the liquid effluent to a pressure which is at least equal to the pressure of the pressurized gas to cause the effluent to be moved through the tube and to be discharged along a path from an end of the tube to contact the treating material and react therewith to provide the disposable reaction product; and

means for causing the effluent to contact the treating material at a predetermined distance from the end of said tube to prevent the reaction product from contacting the end of said tube, said causing means including means for causing the gas to envelop the effluent being discharged along the path for the predetermined distance and for shielding the gas envelope from the treating material, the pressure of the gas being sufficient to maintain the treating material spaced from the end of the tube to avoid the evolution of undesirable vapors.

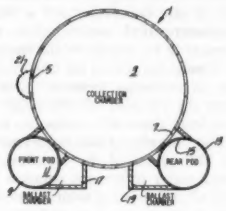
4,554,079

IMMISCIBLE LIQUID COLLECTOR AND METHOD OF OPERATION

Michael G. Wingard, and John F. D. Peterson, both of Baton Rouge, La., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 3, 1983, Ser. No. 548,327
Int. Cl.⁴ E02B *15/04*
U.S. Cl. 210—776 **11 Claims**

1. An apparatus for removing floating and suspended immiscible liquids from a flowing stream comprising an elongated interceptor having a chamber defined therein, provided with an upper inlet and a lower outlet, a plurality of additional elongated structures having chambers defined therein comprising: a first pod enclosing an air chamber joined to said interceptor in side by side relationship below said inlet, a second pod joined to said interceptor in side by side relationship adjacent said outlet, and having an opening defined therein in communication with said outlet; the interceptor inlet, outlet, and pods being so positioned relative to one another that when in skimming position said apparatus floats in said stream with the lower boundary of said inlet below the surface of said stream, and the upper boundary, of said inlet being above the surface of said stream, with said interceptor remaining in said position while liquid from the surface of said stream flows into said interceptor through said inlet into said chamber and whereby when the liquid level in said chamber reaches the level of the lower boundary of said outlet, said liquid flows into said second pod which sinks to a lower level as it fills, thereby rotating said interceptor whereby said lower boundary of said inlet is rotated to a position above the surface of said stream thereby



stopping liquid flow into said interceptor, intermittantly operable means for removing said liquid from said second pod, said intermittantly operable means being operative only upon rotation of the interceptor to a position where the lower boundary of said inlet is above the surface of said stream whereby said pod and said interceptor return to their original positions with the lower boundary of said inlet below the surface of said stream and the upper boundary of said inlet above the surface of said stream and wherein all said additional structures having chambers defined therein are below the surface of said stream.

4,554,080

AQUEOUS DRILLING FLUIDS CONTAINING ALKENYL SUCCINIC ANHYDRIDES

James A. Headley, Missouri City, Tex., assignor to Texaco Inc., White Plains, N.Y.

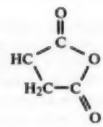
Filed May 2, 1984, Ser. No. 606,111
Int. Cl.⁴ C09K *7/02*
U.S. Cl. 252—8.5 A **11 Claims**

1. An aqueous drilling fluid having a pH greater than about 8, comprising:

water

clay solids; and

about 0.2% to about 3% by volume of a lubrication additive comprising a polyolefin having a molecular weight of about 500 to about 2100 and having one or more substituent groups of the formula:



4,554,081

HIGH DENSITY WELL DRILLING, COMPLETION AND WORKOVER BRINES, FLUID LOSS REDUCING ADDITIVES THEREFOR AND METHODS OF USE

John K. Borchardt, Duncan, Okla., and S. Prabhakara Rao, Parma, Ohio, assignors to Halliburton Company, Duncan, Okla.

Filed May 21, 1984, Ser. No. 612,203
Int. Cl.⁴ C09K *7/00*
U.S. Cl. 252—8.5 A **12 Claims**

1. A method of contacting a subterranean formation with a

high density well drilling, completion or workover brine having a density of from about 9.0 to about 21.5 pounds per gallon while minimizing the loss of such brine into said formation comprising:

combining an additive for reducing fluid loss with said brine in an amount in the range of from about 0.01 percent to about 1.0 percent by weight of said brine prior to contacting the formation therewith, said additive comprising a water-soluble binary copolymer comprising dimethylaminoethyl methacrylate repeating monomer unit present in an amount in the range of from about 25 to about 95 mole percent of said copolymer and a methyl chloride salt of dimethylaminoethyl methacrylate repeating monomer unit present in an amount in the range of from about 5 to about 75 mole percent of the copolymer wherein the total number of repeating monomer units in the copolymer increases the viscosity of deionized water to within the range of from about 400 centipoises to about 40,000 centipoises said viscosity of said copolymer being measured by adding 10.0 grams of the copolymer to 90.0 grams of deionized water to form a solution and measuring said viscosity of said solution with a Brookfield LVT Viscometer, No. 2 spindle, 6 r.p.m. at 7620 F.; and,

contacting said formation with said drilling, completion or workover brine containing said additive.

7. A method of contacting a subterranean formation with a high density well drilling, completion or workover brine having a density of from about 9.0 to about 21.5 pounds per gallon while minimizing the loss of such brine into said formation comprising:

combining an additive for reducing fluid loss with said brine in an amount in the range of from about 0.01 percent to about 1.0 percent by weight of said brine prior to contacting said formation therewith, said additive comprising a water-soluble ternary copolymer selected from the group consisting of:

(a) a ternary copolymer comprising dimethylaminoethyl methacrylate repeating monomer unit present in an amount in the range of from about 5 to about 20 mole percent of the copolymer, N,N-dimethylacrylamide repeating monomer unit present in an amount in the range of from about 70 to about 90 mole percent of the copolymer, and acrylic acid repeating monomer unit present in an amount in the range of from about 5 to about 10 mole percent of the copolymer;

(b) a ternary copolymer comprising a methyl chloride salt of dimethylaminoethyl methacrylate repeating monomer unit present in an amount in the range of from about 5 to about 20 mole percent of the copolymer, dimethylaminoethyl methacrylate repeating monomer unit present in an amount in the range of from about 70 to about 90 mole percent of copolymer, and methacrylic acid repeating monomer unit present in an amount in the range of from about 5 to about 10 mole percent of the copolymer;

(c) a copolymer comprising diethylaminomethyl methacrylate repeating monomer unit present in an amount in the range of from about 5 to about 20 mole percent of the copolymer, N,N-dimethylacrylamide repeating monomer unit present in an amount in the range of from about 70 to about 90 mole percent of the copolymer, and acrylic acid repeating monomer unit present in an amount in the range of from about 5 to about 10 mole percent of the copolymer;

(d) a copolymer comprising dimethylaminoethyl methacrylate repeating monomer unit present in an amount in the range of from about 5 to about 20 mole percent of the copolymer, N-methacrylamide repeating monomer unit present in an amount in the range of from about 70 to about 90 mole percent of the copolymer, and acrylic acid repeating monomer unit present in an amount in the range of from about 5 to about 10 mole percent of the copolymer;

(e) a copolymer comprising 2-acrylamido-2-methylpropane sulfonic acid repeating monomer unit present in an amount in the range of from about 5 to about 20 mole percent of the copolymer, N-hydroxymethyl acrylamide repeating monomer unit present in an amount in the range of from about 70 to about 90 mole percent of the copolymer, and acrylic acid repeating monomer unit present in an amount in the range of from about 5 to about 10 mole percent of the copolymer;

(f) a copolymer comprising 2-acrylamido-2-methylpropane sulfonic acid repeating monomer unit present in an amount in the range of from about 5 to about 20 mole percent of the copolymer, N,N-dimethylacrylamide repeating monomer unit present in an amount in the range of from about 70 to about 90 mole percent of the copolymer, and acrylic acid repeating monomer unit present in an amount in the range of from about 5 to about 10 mole percent of the copolymer; and

(g) mixtures thereof;

wherein the total number of monomer units in the copolymer is sufficient to increase the viscosity of deionized water to within the range of from about 400 centipoises to about 40,000 centipoises said viscosity of said copolymer being measured by adding 10.0 grams of the copolymer to 90.0 grams of deionized water to form a solution and measuring said viscosity of said solution with a Brookfield Model LVT Viscometer, No. 2 spindle, 6 r.p.m. at 76° F.;

contacting said formation with said drilling, completion or workover brine containing said additive.

4,554,082

FRACTURING METHOD FOR STIMULATION OF WELLS UTILIZING CARBON DIOXIDE BASED FLUIDS

Marlin D. Holtmyer; Phillip C. Harris, and Charles V. Hunt, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 572,732, Jan. 20, 1984, Pat. No. 4,519,455. This application Feb. 19, 1985, Ser. No. 702,986

Int. Cl.[4] E21B *43/26*

U.S. Cl. 252—8.55 R **5 Claims**

1. A substantially anhydrous, stabilized emulsion fluid composition comprising:

ethylene glycol present in an amount of from about 1 percent to about 50 percent by weight of the liquid constituents of said composition;

a hydrocarbon selected from the group consisting of kerosene, diesel fuel, jet fuel and refined or light crude oil present in an amount of from about 1 percent to about 55 percent by weight of the liquid constituents of said composition;

a surfactant present in an amount sufficient to stabilize said composition;

an aqueous fluid present in an amount of from about 0 to about 10 percent by weight of said composition; and

liquid carbon dioxide present in an amount of from about 30 to about 95 percent by volume of said composition.

4,554,083

LIQUID LEATHER CARE COMPOSITIONS

Heinz-Dieter Soldanski, Essen, and Bernd-Dieter Holdt, Duesseldorf, both of Fed. Rep. of Germany, assignors to Henkel KGaA, Duesseldorf, Fed. Rep. of Germany

Filed Jun. 26, 1984, Ser. No. 624,541

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1983, 3323939

Int. Cl.[4] C09G *1/04, 1/10*; C14C *11/00*

U.S. Cl. 252—8.57 **14 Claims**

1. A liquid leather-care composition in the form of an aqueous dispersion having a pH in the range of from about 7 to about 8, comprising the following non-aqueous constituents:

(a) from about 15 to about 45% of at least one wax from the group consisting of carnauba wax, candelilla wax, and montanic acid ester wax;

(b) from about 10 to about 30% lanolin;

(c) from about 20 to about 45% of at least one dispersible, film-forming aliphatic polyurethane resin which is an addition reaction product of an aliphatic diisocyanate and an aliphatic diol, and, optionally, a relatively small quantity of an aliphatic diamine, wherein the molar ratio of diisocyanate to the sum of the diol and the diamine is between about 1.0 and about 0.8;
(d) from about 1 to about 4% of at least one water-soluble polymeric polycarboxylic acid;
(e) from about 6 to about 24% of at least one nonionic emulsifier which is a reaction product of ethylene oxide and either a long-chain alcohol, an alkyl phenol, or a fatty acid amide;
(f) from 0 to about 2% of at least one water-soluble hydroxyalkylamine containing from 2 to 12 carbon atoms;
(g) from 0 to about 5% of at least one of perfume oils, preservatives, foam inhibitors, emulsifying aids, and dyes; and
(h) from 0 to 25% of at least one liquid high-boiling organic solvent flow promoter; wherein the above percentages are percentages by weight based on the total weight of the nonaqueous constituents and the sum of the nonaqueous constituents is from about 3 to about 20% by weight of the aqueous dispersion.

4,554,084

SEALING RING

Klaus Lonne, and Klaus-Peter Majewski, both of Burscheid, Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Nov. 28, 1983, Ser. No. 555,514

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1982, 3244505

Int. Cl.[4] C10M *7/02*

U.S. Cl. 252—12.4 **9 Claims**

1. Sealing ring having at least one jacket face which serves as slide face, the ring comprising pressed together fibers and slide material, with the fibers being pressed together with the slide material, and containing at least one additive which reacts chemically with the fibers under the pressure and/or the development of heat resulting from friction stresses, said additive being selected from the group of compounds consisting of chlorides, sulfates, carbonates, borates and phosphates of alkali metals; silicate and phosphate glasses; thio compounds; organic complexes of chlorine, sulfur, phosphorus and arsenic; boron carbide; potassium borofluoride; and other boron containing substances, whereby said additives form surface coatings or chemically polish said fibers; said additives and slide materials being evenly distributed throughout the fibers.

4,554,085

NON-METALLIC, ANTIOXIDANT, ANTIWEAR LUBRICANT ADDITIVE SYSTEM

Mikio Zinbo, Canton; Ronald K. Jensen, Trenton, and Milton D. Johnson, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 23, 1984, Ser. No. 573,276

Int. Cl.[4] C10M *1/48*

U.S. Cl. 252—46.6 **7 Claims**

1. A lubricating oil composition comprising a major proportion of a lubricating base oil and an additive system which comprises, in equilibrium:

I. a mixture of:

(A) organic disulfide compounds selected from the group of compounds having the chemical formula: $[(RO)_2PS]_2S_2$,

wherein R is organic group; and

(B) trivalent organophorphorous compounds

(i) having a boiling point above about 150° C. and

(ii) being selected from the group of compounds having the chemical formula Y_3P,

wherein Y is R'—or R'O—, and wherein each R' is the same or different organic group,

said R and R' being individually selected from substituted or non-substituted organic groups comprising aliphatic, aromatic or aliphatic aromatic radicals, and

II. an ionic complex consisting of 1:1 molar reaction product of A and B, which decomposes to acidic species having antiwear and antioxidant properties, wherein said disulfide compounds are present in said composition in a concentration of at least about 0.01 molar, and the molar ratio of (B):(A) in said composition is from about 0.1-1.5:1.

4,554,086

BORATE ESTERS OF HYDROCARBYL-SUBSTITUTED MONO- AND BIS-SUCCINIMIDES CONTAINING POLYAMINE CHAIN LINKED HYDROXYACYL GROUPS AND LUBRICATING OIL COMPOSITIONS CONTAINING SAME

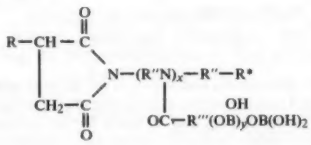
Thomas J. Karol, Wappingers Falls, and Harold S. Magaha, Poughkeepsie, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 26, 1984, Ser. No. 604,188

Int. Cl.[4] C10M *1/54, 3/48;* **C09D** *5/04*

U.S. Cl. 252—49.6 **27 Claims**

1. A hydrocarbyl-substituted mono-or bis-succinimide containing polyamine chain-linked hydroxyacyl radicals characterized by the formula



wherein

R is a hydrocarbyl group containing about 8–400 carbon atoms;

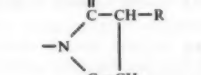
R'' is a divalent hydrocarbon group;

x is 1–6;

y is 0–3;

R''' is a divalent hydrocarbon group;

R* is $—NH_2$, $—N(H)R''H$



or a hydrocarbyl-substituted succinyl group

4,554,087

METAL PROCESSING COMPOSITION

Iwane Chiba, Saitama; Junji Fujiwara, Hiroshima; Hiroshi Kuwamoto, Hiroshima; Tomoya Izushi, Hiroshima; Toshimi Muto, and Haruji Toyama, both of Kanagawa, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo and Yushiro Chemical Industry Co., Ltd., Osaka, both of, Japan

PCT No. PCT/JP84/00290, § 371 Date Jan. 25, 1985, § 102(e) Date Jan. 25, 1985, PCT Pub. No. WO84/04928, PCT Pub. Date Dec. 20, 1984

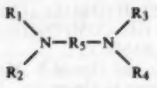
PCT Filed Jun. 5, 0984, Ser. No. 695,867

Claims priority, application Japan, Jun. 7, 1983, 58-100148; May 9, 1984, 59-91082

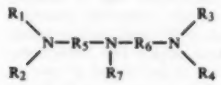
Int. Cl.[4] C10M *3/04, 3/38*

U.S. Cl. 252—49.9 1 Claim

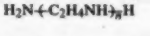
1. A metal processing composition which comprises a water-soluble cationic compound obtained by neutralizing a condensation product having an average molecular weight of 500 to 1000, which is obtained by reacting an aliphatic dicarboxylic acid having 6 to 16 carbon atoms or a dicarboxylic acid mixture comprising (A1) an aliphatic dicarboxylic acid having 6 to 16 carbon atoms and (A2) an aliphatic dicarboxylic acid having 17 to 22 carbon atoms at an (A1)/(A2) molar ratio of ½ to 3/1 with at least one compound having at least two basic nitrogen atoms, which is selected from the group consisting of (a) compounds represented by the following general formula:



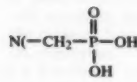
wherein R_1 through R_4 stand for H or an alkyl group having 1 to 3 carbon atoms, at least one of R_1 through R_4 stands for H, and R_5 stands for an alkylene group having 1 to 4 carbon atoms, (b) compounds represented by the following general formula:



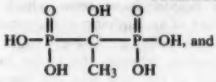
wherein R_1 through R_4 and R_7 stand for H or an alkyl group having 1 to 3 carbon atoms, at least one of R_1 through R_4 and R_7 stands for H, and R_5 and R_6 stand for an alkylene group having 1 to 4 carbon atoms, (c) compounds represented by the following general formula:

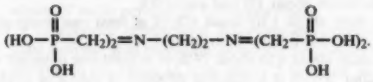


wherein n is an integer of from 3 to 5, and (d) hydroxyl group-containing basic nitrogen compounds selected from ethylaminoethanolamine, 1,2-bis(hydroxyethylamino)ethane, 1,3-diamino-2-propanol, 2-hydroxyethylaminopropylamine, N,N'-bis(hydroxyethyl)diethylenetriamine, 2-hydroxypropyltrimethylenetetramine and N-2-hydroxypropyltriethylenetetramine, with at least one phosphorus oxy acid selected from the group consisting of (1) phosphoric acid, phosphorous acid, hypophosphorous acid and perphosphoric acid, (2) a condensed phosphorus oxy acid selected from pyrophosphoric acid, trimetaphosphoric acid, tetrametaphosphoric acid, pyrophosphorous acid, polymetaphosphorous acid and diperphosphoric acid and (3) a compound selected from compounds represented by the following formulae (i) through (iii):

(i) 

-continued

(ii) 

(iii) 

4,554,088

MAGNETIC PARTICLES FOR USE IN SEPARATIONS

Roy A. Whitehead, Hingham; Mark S. Chagnon, Lowell; Ernest V. Groman, Brookline, and Lee Josephson, Arlington, all of Mass., assignors to Advanced Magnetics Inc., Cambridge, Mass.

Filed May 12, 1983, Ser. No. 493,991

Int. Cl.[4] C04B *35/04;* H01F *1/26*

U.S. Cl. 252—62.54 11 Claims

1. A coupled magnetically-responsive particle comprising a magnetic metal oxide core generally surrounded by a coat of polymeric silane to which molecules of at least one type of bioaffinity adsorbent are covalently coupled, a mass of the uncoupled particles being dispersable in aqueous media to form an aqueous dispersion having (a) a fifty-percent-turbidity-decrease settling time of greater than about 1.5 hours in the absence of a magnetic field, and (b) a ninety-five-percent-turbidity-decrease separation time of less than about 10 minutes in the presence of a magnetic field, the magnetic field being applied to the aqueous dispersion by bringing a vessel containing a volume of the dispersion into contact with a pole face of a permanent magnet, the permanent magnet having a volume which is less than the volume of the aqueous dispersion in the vessel.

4,554,089

FERROMAGNETIC PARTICLES WITH STABLE MAGNETIC CHARACTERISTICS AND METHOD OF PREPARING SAME

Shizuo Umemura, and Tatsuji Kitamoto, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 25, 1983, Ser. No. 545,289

Claims priority, application Japan, Oct. 25, 1982, 57-186036

Int. Cl.[4] C01G *49/08;* C04B *35/26*

U.S. Cl. 252—62.56 7 Claims

1. Cobalt-free ferromagnetic particles comprising a ferromagnetic metal inner core and an oxidized outer layer containing paramagnetic Fe^{3+}, wherein the particles have a saturation magnetization of 60 to 100 emu/g and a coercive force of 500

Oe or more, and wherein the outer layer provides a means for stabilizing the magnetic characteristics of the particles at a temperature not higher than 80° C. in air.

4,554,090

COMBINATION CORROSION/SCALE INHIBITOR

Loyd W. Jones, P.O. Box 9917, Tulsa, Okla. 74107

Filed Mar. 9, 1984, Ser. No. 587,494

Int. Cl.⁴ C02C *5/02*

U.S. Cl. 252—181 **10 Claims**

1. A combination corrosion and scale inhibitor composition comprising the reaction product of:

(a) a heterocyclic nitrogen containing compound selected from the group consisting of alkyl substituted pyridine, alkyl substituted pyrimidine, alkyl substituted imidazole, alkyl substituted imidazoline, quinoline, quinaldine and mixtures thereof, wherein the alkyl substitution comprises at least one alkyl group of one to about six carbon atoms;

(b) an aldehyde selected from the group consisting of formaldehyde, benzaldehyde, furfural and mixtures thereof; and

(c) a phosphorus acid constituent selected from the group consisting of phosphoric acid, polyphosphoric acid, P_2O_5, phosphonic acid, acidic phosphate esters of amino alcohols, ethoxylated amines, and alkanol amines and mixtures thereof.

4,554,091

COLORED BLEACHING COMPOSITIONS

Robert A. Jones, Meols, England; Frank Jones, Dielheim, Fed. Rep. of Germany, and Graham Taylor, Eastham, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Jun. 4, 1984, Ser. No. 617,202

Claims priority, application United Kingdom, Jun. 9, 1983, 8315838

Int. Cl.⁴ C09B *69/10*; C11D *3/395*

U.S. Cl. 252—187.25 **7 Claims**

1. A coloured aqueous bleaching agent comprising an oxygen or chlorine bleaching agent and a colouring agent in an aqueous medium, wherein the composition comprises from 0.0005–10% by weight of a colouring agent which is a coloured polymer latex consisting of a copolymer of a hydrophobic olefinic monomer with a copolymerisable olefinic monomer containing a chromophore.

6. A composition according to claim 1, wherein the composition contains an alkali metal hypochlorite.

4,554,092

PRESERVATIVE SYSTEM COMPOSITION FOR NON-POROUS SURFACES AND WOODEN SURFACES

Richard J. Guglielmo, Sr., Cresskill, N.J., assignor to EMA Company, Cresskill, N.J.

Continuation-in-part of Ser. No. 888,373, Mar. 20, 1978, Pat. No. 4,393,102, and a continuation-in-part of Ser. No. 341,275, Jan. 21, 1982,. This application Jun. 27, 1983, Ser. No. 508,519

Int. Cl.⁴ C09K *15/32*

U.S. Cl. 252—400 R **8 Claims**

1. A preservative composition for non-porous and wooden surfaces comprised of a tri-n-butyl tin ester selected from the group consisting of tri-n-butyl tin linoleate, bis(tri-n-butyl) tin succinate, tri-n-butyl tin benzoate, tri-n-butyl tin salicylate and mixtures thereof in an amount of from 2 to 10 percent by weight in a solvent system.

4,554,093

ELECTRICALLY CONDUCTIVE DOPED BLOCK COPOLYMER OF POLYACETYLENE AND POLYISOPRENE

Mahmoud Aldissi, Los Alamos, N. Mex., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jun. 27, 1984, Ser. No. 625,323

Int. Cl.⁴ H01B *1/00*

U.S. Cl. 252—500 **4 Claims**

1. An electrically conductive composition of matter comprising a block copolymer of polyisoprene having a molecular weight of between approximately 7,000 and 10,075, and polyacetylene having a molecular weight of approximately 1500 and 1910, said block copolymer being doped with iodine.

2. A method of making an electrically conductive block copolymer of polyisoprene having a molecular weight of between approximately 7,000 and 10,075, and polyacetylene having a molecular weight of between approximately 1500 and 1910 comprising:

a. polymerizing monomeric isoprene in a solution containing n-butyllithium in toluene, thereby forming active polyisoprenyllithium in said solution:

b. adding an amount of tetrabutoxytitanium which is substantially equimolar in amount to the amount of said polyisoprenyllithium, thereby forming an isoprenyl-butoxytitanium (III) catalyst in said solution;

c. introducing gaseous acetylene into said solution to form by a spontaneous catalytic reaction a block copolymer of polyisoprene and polyacetylene;

d. separating said block copolymer from solution; and

e. doping said block copolymer with I_2 to render said copolymer electrically conductive.

4,554,094

ELECTRICALLY CONDUCTIVE FILLERS

Fridolin Bäbler, Marly, Switzerland, and Kurt Munk, Grenzach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 29, 1984, Ser. No. 626,508

Claims priority, application Switzerland, Jul. 8, 1983, 3766/83; Sep. 22, 1983, 5153/83; Feb. 9, 1984, 617/84

Int. Cl.⁴ A01B *1/06*

U.S. Cl. 252—518 **12 Claims**

1. An electrically conductive filler which is obtained by prolysis of a mixture of at least one metal phthalocyanine and at least one inorganic filler, wherein the mixture contains 5 to 99 parts by weight of metal phthalocyanine per 100 parts by weight of total mixture, and the pyrolysis is carried out at a temperature from 650° to 2,500° C. under a pressure of 0.5 to 20 bar in air, in an inert gas, in air with an increased oxygen content or in hydrogen gas.

4,554,095

ORGANOLEPTIC USES OF ESTERS OF 1-HYDROXYMETHYL-2-ACYL CYLOPROPANE

Richard M. Boden, Ocean; Marie R. Hanna, Hazlet, and Theodore J. Tyszkiewicz, Sayreville, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

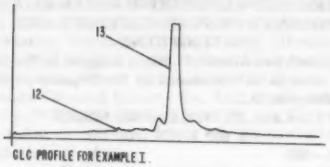
Division of Ser. No. 541,275, Oct. 12, 1983, Pat. No. 4,500,448, which is a division of Ser. No. 422,486, Sep. 23, 1983, Pat. No. 4,435,428. This application Jul. 13, 1984, Ser. No. 630,693

Int. Cl.⁴ A61K *7/46*

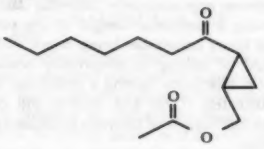
U.S. Cl. 252—522 R **3 Claims**

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of adding to said consumable material, an aroma augmenting or enhancing quantity of at least one ester selected from the group consisting of:

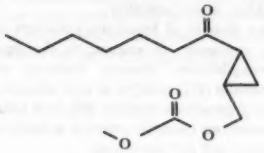
FIG.IA



GLC PROFILE FOR EXAMPLE I.



and



4,554,096

PERFUMERY USES OF PHENYL ALKANOLS

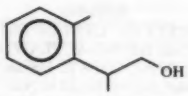
Wilhelmus J. Wiegers, Red Bank, and Mark A. Sprecker, Sea Bright, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 482,823, Apr. 7, 1983, Pat. No. 4,512,918. This application Oct. 1, 1984, Ser. No. 656,652

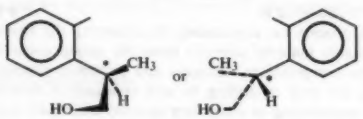
Int. Cl.⁴ A61K *7/46;* **C11B** *9/00*

U.S. Cl. 252—522 R **1 Claim**

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions and colognes comprising the step of adding to said consumable material an aroma augmenting or enhancing quantity of a compound defined according to the structure:



or a stereo-isomer thereof defined according to one of the structures:



4,554,097

ELASTIC DETERGENT PRODUCT CONTAINING ANIONIC AND AMPHOTERIC SYNTHETIC ORGANIC DETERGENTS

Frank Schebece, Edison, and John C. Carson, Jr., Manasquan Park, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 326,582, Dec. 2, 1981, abandoned, which is a continuation of Ser. No. 746,995, Dec. 2, 1976, abandoned. This application Apr. 19, 1984, Ser. No. 594,971

The portion of the term of this patent subsequent to Jan. 1, 1997, has been disclaimed.

Int. Cl.⁴ C11D *1/50, 17/00*

U.S. Cl. 252—542 **15 Claims**

1. An elastic detergent product comprising about 10 to 80% of a mixture of an anionic synthetic organic detergent selected from the group consisting of alkali metal monoglyceride sulfate, ammonium monoglyceride sulfate, triethanolammonium higher fatty alcohol sulfate and mixtures thereof, and an amphoteric synthetic organic detergent, in a proportion between about 1:5 and 5:1, about 5 to 30% of gelatin and about 5 to 60% of water.

4,554,098

MILD LIQUID DETERGENT COMPOSITIONS

Stephen C. Klisch, Somerset; Kuo-Yann Lai, Kendall Park, and Clarence R. Robbins, Piscataway, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Feb. 19, 1982, Ser. No. 350,497

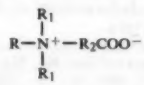
Int. Cl.⁴ C11D *1/84, 1/14*

U.S. Cl. 252—547 **10 Claims**

1. A high foaming, liquid detergent composition having reduced skin-irritation properties which consists essentially of, by weight, 12% to 24% of alkyl ether sulfate having the structural formula

$$R(OC(2)H(4))nOSO(3)M$$

wherein R is an alkyl of 10 to 16 carbon atoms, n has an average value of 5 to 12 and M is a cation; a supplementary, water-soluble, non-soap, anionic detergent having in its molecular structure a C(7)—C(22) alkyl, alkenyl or acyl group and a sulfonate, sulfate or carboxylate group, the weight ratio of said alkyl ether sulfate to said supplementary detergent being in the range of 1.5:1 to 6:1; 2% to 6% of a zwitterionic detergent having the structural formula



wherein R is C(8)—C(18) alkyl or C(8)—C(18) alkanamido C(2)—C(3) alkyl group, R1 is a C(1)—C(4) alkylene or hydroxylene group; 2% to 6% of an N-C(12)—C(14) alkanoic acid C(2)—C(3) alkanolamide, the weight ratio of said alkanolamide to said zwitterionic detergent being in the range of 1:2 to 2:1; and the balance being an aqueous medium containing 2% to 20% of a solubilizer.

4,554,099
OPAQUE GENERAL-PURPOSE CLEANING COMPOSITION COMPRISING ALCOHOL ESTERIFIED RESIN COPOLYMERS

David E. Clarke, Wirral, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Apr. 18, 1984, Ser. No. 601,526

Claims priority, application United Kingdom, Apr. 19, 1983, 8310529

Int. Cl.[4] C11D *1/831, 1/08*

U.S. Cl. 252—551 **11 Claims**

1. An opaque liquid general-purpose cleaning composition having non-streak cleaning properties comprising

(a) from 0.01–98% by weight of a nonionic detergent surfactant or mixture of nonionic surfactants having an HLB-value of between 3 to 10,

(b) 0.005–20% by weight of an at least 5% alcohol esterified copolymer formed from an unsaturated monomer and an unsaturated dicarboxylic acid or -anhydride,

(c) from 0.5–10% by weight of a magnesium salt of an anionic synthetic detergent, the balance being a compatible liquid medium consisting of water or mixtures of water and one or more water-miscible organic solvents.

3. A composition according to claim 1, wherein the magnesium salt is a magnesium salt of a C_{10}–C_{18} alkyl sulphate or C_{10}–C_{18} alkylether sulphate with 1–10 moles of ethylene oxide.

4,554,100
ALKYLAMIDES OF CARBOXYALKANOYL PEPTIDES AND METHOD FOR PREPARATION THEREOF

Evzen Kasafirek; Premysl Fric; Jan Slaby, and Alena Roubalova, all of Prague, Czechoslovakia, assignors to Spofa, Spojene podniky pro zdravotnickou vyrobu, Prague, Czechoslovakia

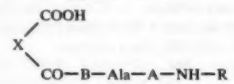
Filed Aug. 9, 1982, Ser. No. 406,168

Claims priority, application Czechoslovakia, Aug. 7, 1981, 5977-81

Int. Cl.[4] C07C *103/52*

U.S. Cl. 260—112.5 R **2 Claims**

1. Alkylamide of carboxyalkanoykl peptide of the formula



wherein

(a) R is selected from the group consisting of straight and branched chain alkyl groups of 1–5 carbon atoms, and a lower aralkyl group,

(b) A is a residue selected from the group consisting of peptidically bound proline and peptidically bound alanine,

(c) B is selected from the group consisting of a peptide bond, a peptidically bound proline residue and a peptidically bound alanine residue, and

(d) X is selected from the group consisting of $(CH_2)_n$ and CH═CH groups wherein n is an integer of 1–3.

4,554,101
IDENTIFICATION AND PREPARATION OF EPITOPES ON ANTIGENS AND ALLERGENS ON THE BASIS OF HYDROPHILICITY

Thomas P. Hopp, Seattle, Wash., assignor to New York Blood Center, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 223,558, Jan. 9, 1981, , and a continuation-in-part of Ser. No. 272,855, Jun. 12, 1981, , and a continuation-in-part of Ser. No. 358,150, Mar. 15, 1982,. This application Jan. 28, 1983, Ser. No. 461,802

Int. Cl.[4] C07C *103/52;* **C07G** *7/00;* **G01N** *33/54;* **A61K** *37/00*

U.S. Cl. 260—112.5 R **6 Claims**

1. A method of synthesizing a peptide comprising a sequence of at least six amino acid residues corresponding to the antigenic or allergenic determinant on an antigenic or allergenic protein on the basis of hydrophilicity which method comprises:

(a) determining the amino acid sequence of said antigen or allergen;

(b) assigning relative hydrophilicity values to each sequenced amino acid on a basis selected as follows: arginine, 3.0; aspartic acid, 3.0±1.0; glutamic acid; 3.0±1.0; lysine, 3.0; serine, 0.3; asparagine, 0.2; glutamine 0.2; glycine, 0.0; proline −0.5±1.0; threonine, −0.4; alanine, −0.5; histidine, −0.5; cysteine −1.0; methionine, −1.3; valine, −1.5; isoleucine, −1.8; leucine, −1.8; tyrosine, −2.3; phenylalanine, −2.5; and tryptophan, −3.4;

(c) determining the repetitive local average of hydrophilicity values on the basis of said assigned values of each residue of at least six amino acids sequentially along said antigen or allergen;

(d) comparing said repetitive local averages and selecting the peptide of at least six amino acid residues corresponding to the greatest local average hydrophilicity;

(e) synthesizing a peptide comprising said selected peptide of at least six amino acid residues.

4,554,102
CYANOHYDRINATION CATALYST COMPRISING NON-CRYSTALLINE OR AMORPHOUS DIPEPTIDE

Walter Dong, and Walter L. Petty, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 26, 1983, Ser. No. 535,500

Int. Cl.[4] C07C *102/52, 121/75, 120/02;* **B01J** *31/02*

U.S. Cl. 260—112.5 R **3 Claims**

1. A catalyst for cyanohydration which comprises a solid cyclo(D-phenylalanyl-D-histidine) dipeptide having a substantially non-crystalline or amorphous component of the dipeptide.

4,554,103
PREPARATION OF 4-ACYLOXYAZETIDINONES FROM ACYL NITRATES AND PENAMS

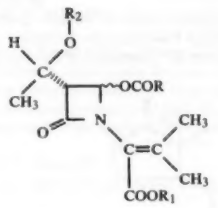
Martin Steinman, Livingston, and Yee-Shing Wong, Belleville, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Jul. 14, 1983, Ser. No. 513,887

Int. Cl.[4] C07D *205/08*

U.S. Cl. 260—239 A **2 Claims**

1. A process for preparing a compound represented by the formula



I

wherein

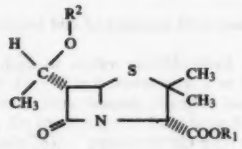
R is lower alkyl, phenyl or phenyl substituted with up to three substitutents independently selected from nitro, halo or lower alkyl;

R_1 is lower alkyl, allyl, or a metabolizable ester group;

R_2 is a readily removable hydroxy protecting group; and

the wavy line means either the R stereochemical configuration, the S stereochemical configuration or a mixture thereof,

which comprises treating a compound represented by the formula



II

wherein R_1 and R_2 are as defined for formula II with a compound represented by the formula

III

wherein R is as defined for formula I in an inert organic solvent at temperatures between about 5° and 20 ° C., followed by treatment with triethyl amine and recovery of the compound of formula I.

4,554,104

DEHALOGENATION PROCESS OF A PENICILLANIC ACID DERIVATIVE

Jagdish C. Kapur, and Herman P. Fasel, both of Delft, Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Filed Oct. 10, 1984, Ser. No. 659,088

Claims priority, application European Pat. Off., Oct. 18, 1983, 83201500.2

Int. Cl.[4] C07D *499/00*; A61K *31/425*

U.S. Cl. 260—245.2 R **9 Claims**

1. A process for the preparation of penicillanic acid-1,1-dioxide comprising subjecting 6,6-dibromo-penicillanic acid-1,1-dioxide to dehalogenation with magnesium in association with an acid.

4,554,105

PROCESS FOR THE PREPARATION OF 1-HYDROXYLATED VITAMIN D COMPOUNDS

Robert H. Hesse, Cambridge, Mass., assignor to Research Institute For Medicine and Chemistry Inc., Cambridge, Mass.

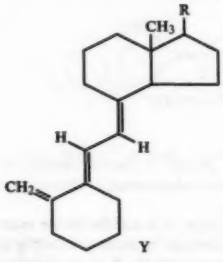
Continuation of Ser. No. 568,620, Jan. 6, 1984, abandoned, which is a continuation of Ser. No. 438,604, Nov. 2, 1982, abandoned. This application Sep. 7, 1984, Ser. No. 648,309

Claims priority, application United Kingdom, Nov. 2, 1981, 8133019; Nov. 2, 1981, 8133021

Int. Cl.[4] C07J *9/00*

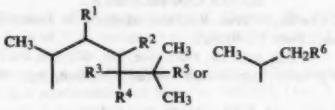
U.S. Cl. 260—397.2 **10 Claims**

1. A process for the 1α-hydroxylation of vitamin D compounds by SE^{IV} oxidation which comprises the oxidation of a 1-unsubstituted 5,6-trans vitamin D compound of formula I:



(I)

wherein Y represents a hydrogen atom, a hydroxyl group, an alkanoyloxy group having 1 to 6 carbon atoms, an aroyloxy group having 7 to 15 carbon atoms, a lower alkoxy group having 1 to 6 carbon atoms which may be interrupted by an oxygen atom, a tetrahydropyranyloxy group or a trihydrocarbylsilyloxy group and R represents a group of the formula:-



wherein R^1, R^2, R^3, and R^5 which may be the same or different, each represents a hydrogen or halogen atom, a hydroxy group, an alkanoyloxy group having 1 to 6 carbon atoms, an aroyloxy group having 7 to 15 carbon atoms, a lower alkoxy group having 1 to 6 carbon atoms which may be interrupted by an oxygen atom, a tetrahydropyranyloxy group or a trihydrocarbylsilyloxy group, or R^1 and R^2 may together form a carbon-carbon bond or an epoxy group; R^4 represents a hydrogen or halogen atom or a methyl or ethyl group, or R^3 and R^4 together represent a keto or protected keto group; and R^6 represents a hydroxy or hydrocarbylsulphonyloxy group in the presence of a selenous acid at a pH in the range 3–9.

2. A process as claimed in claim 1 wherein the selenous acid is generated in situ by the use of selenium dioxide in the presence of water.

4,554,106

METHOD FOR PREPARING 1α-HYDROXYVITAMIN D COMPOUNDS

Hector F. DeLuca; Heinrich K. Schnoes; Seok H. Lee, all of Madison, and Mary E. Phelps, Stoughton, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Nov. 1, 1984, Ser. No. 667,295

Int. Cl.[4] C07J *9/00*

U.S. Cl. 260—397.2 **10 Claims**

1. A method for preparing 1α-hydroxyvitamin D compounds which comprises treating a mixture containing said compounds and their corresponding 1α-hydroxy-5,6-trans-vitamin D isomers, with a dienophile, whereby a mixture containing the dienophile-adduct of the 1α-hydroxy-5,6-trans-vitamin D isomer and the unreacted 1α-hydroxyvitamin D compound is obtained, and separating said mixture.

4,554,107

REFINED FISH OILS AND THE PROCESS FOR PRODUCTION THEREOF

Masayasu Takao, Chiba, Japan, assignor to Q.P. Corporation and Nitto Hogei Co., Ltd., both of, Japan, a part interest

Filed Jun. 29, 1984, Ser. No. 626,114

Claims priority, application Japan, Jul. 18, 1983, 58-130602

Int. Cl.[4] C11B *3/00, 3/02, 3/12*

U.S. Cl. 260—421 **12 Claims**

1. A process for producing refined fish oil, which comprises subjecting a mixture of a polyhydric alcohol, a monoglyceride and a fish oil to a preliminary molecular distillation to remove volatile components and deodorize the fish oil, subjecting the deodorized fish oil thus obtained to further molecular distillation and recovering the vaporized constituents as the refined fish oil.

4,554,108

ALKALI CARBOXYALKYL DITHIOCARBAMATES AND USE AS ORE FLOTATION REAGENTS

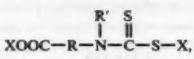
Kenneth B. Kimble; Harold W. Mark, and Clarence R. Bresson, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 26, 1983, Ser. No. 517,297

Int. Cl.[4] C07C *155/08*

U.S. Cl. 260—455 A **8 Claims**

1. The composition represented by the formula



(I)

having from 3 to 8 carbon atoms; wherein R is selected from the group consisting of alkylene radicals; wherein R' is selected from the group consisting of hydrogen and methyl and ethyl radicals; and wherein X is selected from the group consisting of alkali metal atoms.

4,554,109

ESTERS OF 1,5-DIMETHYL BICYCLO [3.2.1] OCTAN-8-OL

Pieter A. Verbrugge, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

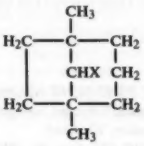
Division of Ser. No. 365,694, Apr. 5, 1982, abandoned. This application Dec. 15, 1983, Ser. No. 561,754

Claims priority, application United Kingdom, Jul. 30, 1981, 8123326

Int. Cl.⁴ C07C *141/12, 137/00*

U.S. Cl. 260—457 **2 Claims**

1. Monoester derivative of 1,5-dimethylbicyclo[3.2.1]octane with the general formula



(I)

wherein X represents an anion of an inorganic polybasic acid selected from the group consisting of sulfuric acid, and sulfurous acid, and the corresponding sodium salt and diester.

4,554,110

PROCESS FOR THE PREPARATION OF AROMATIC CARBONATES

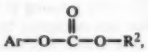
Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 27, 1983, Ser. No. 565,888

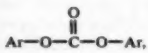
Int. Cl.⁴ C07C *68/06*

U.S. Cl. 260—463 **12 Claims**

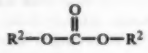
1. An improved process for the preparation of an aromatic carbonate selected from aliphatic aromatic carbonates represented by the formula



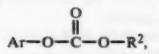
diaromatic carbonates represented by the formula



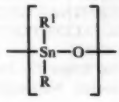
and mixtures thereof which comprises reacting a phenolic compound with a dialiphatic carbonate represented by the formula



or an aliphatic aromatic carbonate represented by the formula



wherein R^2 is independently selected from monovalent aliphatic radicals having from 1 to about 12 carbon atoms and Ar is independently selected from aromatic radicals having from 6 to 12 ring carbon atoms, in the presence of a catalytic amount of a catalyst, the improvement comprising utilizing as the catalyst a polymeric tin compound containing recurring structural units represented by the formula



wherein:

R is selected from monovalent hydrocarbon radicals having from 1 to about 18 carbon atoms; and

R^1 is selected from monovalent hydrocarbon radicals having from 1 to about 18 carbon atoms.

4,554,111

α-HYDROXYETHYLPHOSPHINATES, AND THEIR PRODUCTION AND USE

Mitsuru Sasaki, Osaka, and Yukio Ishiguri, Hyogo, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

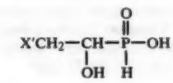
Division of Ser. No. 487,670, Apr. 22, 1983,. This application Aug. 21, 1984, Ser. No. 642,771

Claims priority, application Japan, Apr. 26, 1982, 57-71072; Jun. 8, 1982, 57-98982; Dec. 1, 1982, 57-211815

Int. Cl.⁴ C07F *9/48*

U.S. Cl. 260—502.4 R **1 Claim**

1. A compound of the formula:



wherein X' is a chlorine atom or a bromine atom.

4,554,112

METHOD FOR THE PREPARATION OF VINYL COMPOUNDS

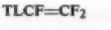
Bobby R. Ezzell, Lake Jackson; William P. Carl, Angleton, and William A. Mod, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 197,420, Oct. 16, 1980, abandoned. This application Apr. 30, 1981, Ser. No. 259,137

Int. Cl.⁴ C07C *143/70*

U.S. Cl. 260—543 F **9 Claims**

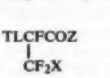
1. A method of preparing a compound having the formula:



(I)

comprising:

reacting a compound having the general formula:



(II)

for a time and at a temperature sufficient to convert at least a portion of compound (II) directly into compound (I);

where
X=Cl, Br or I;
Z=F, Cl, Br, OH, NRR', OA, or SA;
R and R' are independently selected from the group consisting of hydrogen, an alkyl having one or more than one carbon atom, and aryl;
A=alkali metal, alkali earth metal, quaternary nitrogen, or R;
L=oxygen, or sulfur; and
T=an alkyl or aryl radical which does not interfere with the reaction.

4,554,113

LINEAR POLYCHLOROPHOSPHAZENES POSSESSING A DICHLOROTHIOPHOSPHORYL TERMINAL GROUP, PROCESS FOR PREPARATION OF SAID COMPOUNDS AND UTILIZATION THEREOF

Taher Abou Chakra, Villeneuve D'Ascq, and Roger De Jaeger, Chereng, both of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie, France

Filed Jul. 6, 1984, Ser. No. 628,403
Claims priority, application France, Jul. 6, 1983, 83 11264
Int. Cl.[4] C01B *25/10*
U.S. Cl. 260—927 N **28 Claims**

1. Linear polychlorophosphazenes having a dichlorothiophosphoryl terminal group, represented by the formula

$$Cl_2(S)P—NPCl_2—_nCl$$

wherein n is a number of at least 4.

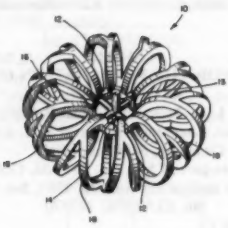
3. A process for the preparation of linear polychlorophosphazenes having a dichlorothiophosphoryl terminal group, which comprises polycondensing P_2NSCl_5 by heating under pressure and temperature conditions adequate for releasing $PSCl_3$, with control of the amount of $PSCl_3$ released so as to obtain a dichlorothiophosphoryl polychlorophosphazene having a number average molecular weight ($\overline{Mn}$) greater than about 630.

4,554,114

PACKING ELEMENT AND METHOD USING SAME

John D. Glen, and Rose-Mary M. Glen, both of Boston, Mass., assignors to Telpac Company Limited, Boston, Mass.

Filed Sep. 18, 1981, Ser. No. 303,485
Int. Cl.[4] B01D *3/04*
U.S. Cl. 261—95 **7 Claims**



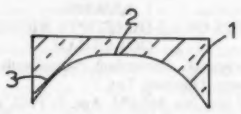
1. In a packaging element of the filamentous toroidal helix type utilized in gas/liquid contact process comprising a series of loop members mounted about the circumference of a hub in an array that is generally perpendicular to said hub and wherein said loop members are connected to at least one adjacent loop member by at least one interloop barrier means which extends from a position near the top of one said loop member to a position near the bottom of said adjacent loop member, the improvement wherein said packing element comprises, axially positioned within said hub, a post-like member which extends upwardly and downwardly to terminate in planes near the upper and lower dimensions of said loops, said post-like members forming means to substantially reduce vertical nesting of a plurality of said packing elements.

4,554,115

METHOD OF CONTROLLING THE CONVEX CURVE OF SOFT LENSES

Charles W. Neefe, P.O. Box 429, 811 Scurry St., Big Spring, Tex. 79720

Continuation-in-part of Ser. No. 527,757, Aug. 30, 1983, abandoned. This application Jul. 5, 1984, Ser. No. 628,157
Int. Cl.[4] B29D *11/00*
U.S. Cl. 264—1.1 **11 Claims**



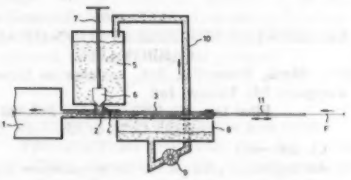
1. A method of providing a soft contact lens having a preselected aspheric convex surface having a shorter radius of curvature at the center and a progressively longer radii toward the edge when in place on the cornea of the eye and having an aspheric concave surface having a longer radius at the center and progressively shorter radii toward the edge when removed from the eye.

4,554,116

OPTICAL CABLE ELEMENT MANUFACTURE

Edward I. Cooke, Addington, England, assignor to BICC Public Limited Company, London, England

Continuation of Ser. No. 307,072, Sep. 30, 1981, abandoned. This application Jan. 27, 1984, Ser. No. 574,360
Claims priority, application United Kingdom, Oct. 1, 1980, 8031693
Int. Cl.[4] G02B *5/14*
U.S. Cl. 264—1.5 **19 Claims**



1. A method of manufacturing an optical cable element comprising a tube of plastics material loosely housing at least one optical fibre, the space in the tube not occupied by the optical fibre or fibres being filled with a water-impermeable medium of a jelly-like nature, which method comprises initially causing at least one optical fibre to travel in a rectilinear direction in the direction of its length under a controlled tension through a substantially rigid capillary tube which extends through a chamber connected to the upstream end of extrusion apparatus and into said extrusion apparatus; introducing water-impermeable medium in a liquid state into said chamber at a substantially constant pressure head; gradually withdrawing the capillary tube from the extrusion apparatus and chamber in an upstream direction so that water-impermeable medium is applied directly to the optical fibre being withdrawn through the chamber and that the advancing optical fibre with water-impermeable medium therearound passes directly from the chamber into the extrusion apparatus; extruding a tube of polymeric material around the advancing optical fibre and the surrounding water-impermeable medium in such a way that the internal diameter of the tube is substantially greater than

the overall diameter of the optical fibre; drawing down the extruded tube of polymeric material to reduce its internal diameter to such an extent that the tube loosely envelopes the optical fibre with the space within the tube not occupied by the optical fibre substantially filled with water-impermeable medium of jelly-like nature and heating the extruded tube as it is being drawn down; and annealing the drawn-down tube to reduce the risk of subsequent substantial shrinkage of the tube.

14. Apparatus for use in the manufacture of an optical cable element, which apparatus comprises apparatus for extruding a tube of polymeric material; a chamber which is connected to the upstream end of the extrusion apparatus and which contains water-impermeable medium in a liquid state and at a substantially constant pressure head; a substantially rigid capillary tube which extends through the chamber and into the extrusion apparatus and which is longitudinally moveable with respect to the chamber and extrusion apparatus; means for causing at least one optical fibre to travel in a rectilinear direction in the direction of its length under a controlled tension through said capillary tube and into said extrusion apparatus; means for withdrawing the capillary tube in an upstream direction so that the advancing optical fibre with water-impermeable medium therearound will pass directly from said chamber into the extrusion apparatus; means, downstream of the extrusion apparatus, for drawing down an extruded tube of polymeric material to reduce its internal diameter to such an extent that the tube will loosely envelop an optical fibre with the space within the tube not occupied by the optical fibre substantially filled with water-impermeable medium of a jelly-like nature and means for heating the extruded tube; and means for annealing the drawn-down tube to reduce the risk of subsequent substantial shrinkage of the tube.

4,554,117

METHOD OF FORMING DENSE CERAMIC BODIES

Andre Ezis, Grosse Ile, and Warren B. Copple, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 30, 1982, Ser. No. 444,901
Int. Cl.⁴ B28B *11/00*
U.S. Cl. 264—67 **17 Claims**

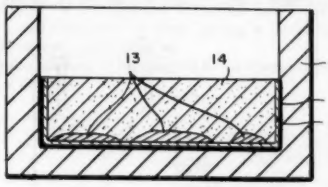
1. A method of simultaneously and uniformly densifying a plurality of semidense ceramic particulate bodies, comprising:
(a) hinging said bodies together with a uniform space therebetween to form a cluster of said bodies;
(b) filling the spaces between said bodies within said cluster with an isostatic pressure medium which is viscous and inert at hot pressing conditions;
(c) hot pressing one or more of said clusters, arranged in contiguous stacked relation, with sufficient pressure and temperature to densify each of said bodies to at least 96% of full theoretical density; and
(d) freeing said bodies from said cluster by rupturing said hinges, leaving each body in a substantially usable condition as a cutting tool.

4,554,118

PROCESS OF INLAYING A DESIGN IN MOLDED SIMULATED MARBLE

Janice P. Seifert, 35 Brentwood Rd., Chelmsford, Mass. 01824

Filed Nov. 10, 1983, Ser. No. 550,383
Int. Cl.⁴ B29C *9/00*
U.S. Cl. 264—73 **2 Claims**



1. A process of decorating a cultured marble molding produced from a marble mix comprising:
(a) applying a hardenable transparent acrylic gel coat to the inner bottom surface of a mold treated with a release agent;
(b) hardening said gel coat;
(c) applying, with an acrylic paint, a painted design on the top surface of said hardened gel coat;
(d) casting a hardenable marble mix in the mold in such a manner as to cover said gel coat and said painted design; and
(e) allowing the marble mix to harden before removing the resultant decorated cultured marble molding from said mold.

4,554,119

PROCESS FOR HEAT TREATING SHAPED ARTICLES OF POLY {[BENZO(1,2-D:4,5-D')BISTHIAZOLE-2,6-DIYL]-1,4-PHENYLENE}, ITS CIS ISOMER OR MIXTURES THEREOF

Edward C. Chenevey, North Plainfield, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Apr. 11, 1983, Ser. No. 483,799
Int. Cl.⁴ B29C *25/00*
U.S. Cl. 264—85 **12 Claims**

1. A process for heat treating a shaped article of poly{[benzo(1,2-d:4,5-d')bisthiazole-2,6-diyl]-1,4-phenylene}, its cis isomer or mixtures thereof on a continuous basis comprising:
(a) heating the article to a temperature in the range of from about 375° to about 650° C.;
(b) stretching the article to obtain a stretch of from about 0.5 to about 4%; and
(c) maintaining the article under the conditions of (a) and (b) for from about 5 to about 300 seconds.

4,554,120

PROCESS FOR ELIMINATING SURFACE MELT FRACTURE DURING EXTRUSION OF THERMOPLASTIC POLYMERS

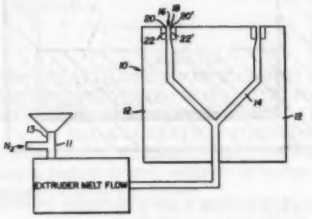
Arakalgud V. Ramamurthy, Somerset, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 508,667, Jun. 28, 1983, abandoned. This application Jul. 3, 1984, Ser. No. 627,517
The portion of the term of this patent subsequent to Jun. 11, 2002, has been disclaimed.
Int. Cl.⁴ B29F *3/04*
U.S. Cl. 264—85 **32 Claims**

1. A process for substantially eliminating surface melt fracture during extrusion of a thermoplastic polymer under conditions of flow rate and melt temperature which would otherwise produce such surface melt fracture which comprises

extruding said polymer through a die having a die land region defining opposing surfaces, and wherein at least one of said opposing surface is fabricated from an alloy containing 5 to 95 parts by weight zinc and 95 to 5 parts by weight of copper whereby surface melt fracture is substantially eliminated on the surface of the polymer adjacent to said zinc/copper containing alloy surface.

25. A die for extruding thermoplastic polymers prone to melt fracture which comprises a die block having inlet means



for introducing an extruder melt into said die block and outlet means for discharging molten polymer from said die block, conduit means for passing molten material from said inlet means to said outlet means, said outlet means including a land entry section and a die land, said die land having surfaces in contact with said molten polymer, at least one of said surfaces being fabricated from an alloy containing 5 to 95 parts by weight zinc and 95 to 5 parts by weight of copper whereby melt fracture is substantially eliminated on the surface of the polymer adjacent to said zinc/copper containing alloy surface.

4,554,121

METHOD OF FORMING LATENT-CONTRACTABLE ELASTOMERIC COMPOSITE YARNS

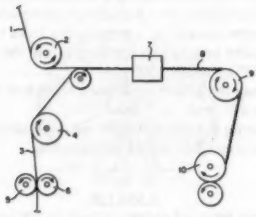
Aloysius A. J. Kramers, Asheville, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 313,929, Oct. 22, 1981, abandoned, which is a continuation-in-part of Ser. No. 178,661, Aug. 18, 1980, abandoned. This application Oct. 6, 1983, Ser. No. 532,339

The portion of the term of this patent subsequent to Aug. 28, 2001, has been disclaimed.

Int. Cl.⁴ D02G *3/02*

U.S. Cl. 264—103 **8 Claims**



1. A process for producing a latent-contractable elastomeric composite yarn, comprising:

(a) an elastomer component consisting of at least one essentially undrawn latent contractable polymer filament which, upon heat treatment, contracts at least 15% of its original length to provide an elastomeric filament, and

(b) at least one relatively inelastic companion filament,

said process comprising feeding said filaments (a) and (b) into an air jet adapted to intermingle said filaments to provide a unitary composite yarn, said filament (a) being fed to said air jet in at least a taut, essentially non-elastically tension-elongated condition, but at less than 100% elastically tension-elongated, while said filament (b) is fed at a rate about equal to the feed rate of (a) or greater than the feed rate of (a) to provide an intermingled unitary composite yarn which, when heat treated, is an elastic yarn wherein the filament (b) becomes load bearing at less than about 95% of the break elongation of said filament (a).

4,554,122

METHOD FOR AIR BLADDER RELEASE DURING TIRE PRODUCTION

John M. Allardice, Allison Park, Pa., assignor to Releasomers, Inc., Bradfordwoods, Pa.

Continuation of Ser. No. 362,559, Mar. 26, 1982, abandoned, which is a division of Ser. No. 319,098, Nov. 6, 1981, , which is a continuation of Ser. No. 133,689, Mar. 25, 1980, abandoned. This application Aug. 13, 1984, Ser. No. 639,869

Int. Cl.⁴ B29H *21/04*

U.S. Cl. 264—130 **7 Claims**

1. A method for the releasable placement of an uncured tire carcass in a tire mold having an expandable air bladder therewithin, comprising the steps of:

applying a fluid blend having release properties enduring multiple repetitions of expansion and contraction of the expandable item to the surface of the air bladder of the tire mold;

curing said fluid blend on said air bladder to create an expandable release film for repeated tire curing production;

wherein said fluid blend consists essentially of from about 20 to 80 parts of an adhesion agent, from about 4 to about 25 parts of a curing agent, from about 5 to about 80 parts of a slip agent, and from about 20 to about 80 parts of a release agent;

wherein said adhesion agent is an aminofunctional diorganopolysiloxane resin having the following formula:

where v is a number up to 20,000; where R represents a divalent radical selected from the group consisting of a divalent hydrocarbon radical having from 1 to 10 carbon atoms, $(OC_2H_4)_r$, $(OHC_2)_r$, $(OC_3H_6)_r$, where r is a number from 1 to 50 and an unsaturated divalent hydrocarbon radical having from 2 to 10 carbon atoms;

where R′ represents a monovalent radical having from 1 to 18 carbon atoms and selected from the group consisting of hydrocarbons and halogenated hydrocarbons, wherein R″ is selected from the group consisting of hydrogen and a monovalent hydrocarbon radical having from 1 to 12 carbon atoms; R″ being the same or different in bonding to N;

said curing agent having the following formula:

wherein n is a number up to 30, where R represents the same divalent radicals as described in said formula for said adhesion agent, and where R′ represents the same monovalent radicals as described in said formula for said adhesion agent;

said slip agent selected from the group consisting of polyal-

kylene glycols and di-organopolysiloxane fluids, and combinations thereof, said polyalkylene glycols having the following formula:

$$HO[—R'''—O—]_t—C_2H_4OH,$$

where R''' is an alkylene radical or an alkoxy-substituted alkylene radical having from 1 to 8 carbon atoms, and combinations thereof, and where t is a number from 2 to 80;

said di-organopolysiloxane fluids having the following formula:

where w is a number greater than 5 and where R' represents he same monovalent radicals as described in said formula for said adhesion agent;

wherein said di-organopolysiloxane fluids have a viscosity range of from about 100,000 to about 2,500,000 centipoise, and

said release agent selected from the group consisting of silazane fluids, mono-organopolysiloxane fluids and combinations thereof, said silazane fluids having the following formula:

where s is a number from 1 to 30, where R' represents the same monovalent radicals as described in said formula for said adhesion agent, and where R'' represent hydrogen and the same monovalent radicals as described in said formula for said adhesion agent;

said mono-organopolysiloxane fluids having the following formula:

where w is a number greater than 5 and where R' represents the same monovalent radicals as described in said formula for said adhesion agent.

4,554,123

PROCESS AND APPARATUS FOR DIRECT EXTRUSION OF THERMAL BARRIER PROFILES

Laurence C. Smyth, Beaconsfield, Canada, assignor to Norandex Inc., Cleveland, Ohio

Filed May 10, 1984, Ser. No. 609,110
Int. Cl.[4] B29F *3/10*; E04B *1/62*
U.S. Cl. 264—166 **19 Claims**

1. A process for constructing a thermal barrier profile, said process comprising the steps of:

(a) providing an elongated structural member having a lineal cavity therein with an open portion;

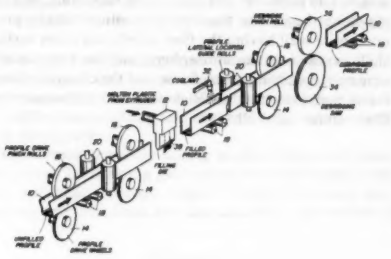
(b) driving the elongated member past a filling die while simultaneously guiding the elongated member so as to positively locate the open portion of the lineal cavity with respect to the filling die in order to completely close the cavity and so form a composite mould with the filling die and the cavity at the location of the filling die;

(c) continuously extruding thermoplastic material under pressure into the composite mould through a fluid flow passage in said filling die; and

(d) removing a lineal portion of the structural member opposite to the open portion of the lineal cavity to form the thermal barrier profile.

5. An apparatus for constructing a thermal barrier profile from an elongated structural member having a lineal cavity with an open portion, comprising:

(a) a filling die adapted to be inserted in the open portion of said lineal cavity;



(b) means for driving the elongated member past the filling die;

(c) guide means to positively locate the open portion of said lineal cavity with respect to the filling die so as to completely close the cavity and so form a composite mould with the filling die and the cavity at the location of the filling die;

(d) means for extruding thermoplastic material under pressure into the composite mould through a fluid flow passage in said filling die; and

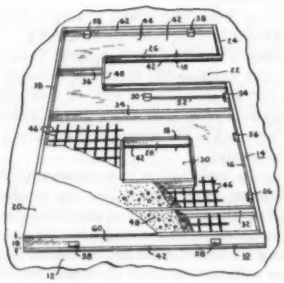
(e) means for removing a lineal portion of the structural member opposite the open portion of the lineal cavity to form the thermal barrier profile.

4,554,124

HORIZONTALLY POURED FIBRESTONE BUILDING CONSTRUCTION

David A. Sudrabin, Delray Beach, Fla., assignor to Fibrestone Incorporated, LaBelle, Fla.

Continuation-in-part of Ser. No. 472,657, Mar. 7, 1983, abandoned. This application Jun. 22, 1983, Ser. No. 506,526
Int. Cl.[4] E04B *5/04*
U.S. Cl. 264—263 **4 Claims**



1. The method of forming a composite wall for a building structure, said wall having a relatively thin outer shell formed of fiber reinforced concrete and having an outer surface defin-

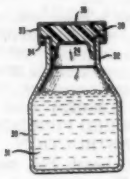
ing the outside surface of the wall and adapted to be exposed to the atmosphere and having an inside surface, comprising the steps of positioning a preformed fiber reinforced shell horizontally with its outer surface in a face down position in contact with a substantially flat surface, securing a load bearing structure including a frame aligned with the inside surface of the fiber reinforced shell while the shell is in a horizontal position with the frame extending above the inside surface of the shell and having a substantially uniform thickness throughout and having an upper substantially flat surface, placing concrete in the space within the frame to increase the load bearing capacity of the load bearing frame, striking off the concrete in alignment with the upper surface of the frame after the concrete has attained an initial set and prior to its hardening, and thereafter elevating the wall to the vertical position thereby providing a composite wall having the fiber reinforced outer surface of the shell exposed to the atmosphere and the inner load bearing structure consisting of the frame and the concrete placed in the frame and extending parallel with and coextensive with the fiber reinforced shell.

4,554,125

METHOD OF MAKING A STOPPER FOR A STERILE FLUID CONTAINER

Julius Z. Knapp, Somerset, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Mar. 17, 1983, Ser. No. 476,075
Int. Cl.[4] B29H *9/00*; B29C *11/00*
U.S. Cl. 264—266 **4 Claims**



1. A method for making a stopper to hold fluid in a container, said stopper having a thin layer of thermoplastic laminated without adhesive to form a surface intended to contact the fluid comprising:

(a) providing a first mold half having a concavity and a second mold half opposite the concavity,

(b) disposing a sheet of thermoplastic between the mold halves and vulcanizable elastomer between the thermoplastic and the second mold half, the thermoplastic having an elongation of at least 450% and a crystalline melting point higher than the minimum vulcanizing temperature of the elastomer,

(c) heating the mold halves to a temperature that is within the softening range and below the crystalline melting point of the thermoplastic and above the minimum vulcanizing temperature of the elastomer,

(d) pressing the heated mold halves toward each other with pressure sufficient to force elastomer into the concavity while simultaneously forming thermoplastic against the surface of the concavity, and

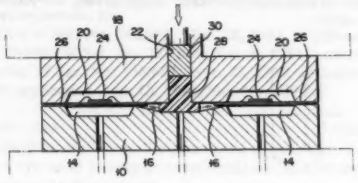
(e) holding the mold halves in pressed position for a time sufficient to vulcanize the elastomer.

4,554,126

METHOD FOR ENCAPSULATING SEMICONDUCTOR DEVICES

Michitoshi Sera, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 1, 1983, Ser. No. 510,226
Claims priority, application Japan, Jul. 3, 1982, 57-114799
Int. Cl.[4] B29C *6/04*; B29B *1/03*
U.S. Cl. 264—272.17 **4 Claims**



1. A method for resin encapsulation of a semiconductor device, comprising the steps of:

providing a lower mold die having a flat portion and a cavity;

providing an upper mold die having a flat portion and a cavity corresponding to the flat portion and the cavity of the lower mold die respectively;

fixing the semiconductor device between the cavities of the upper and lower mold dies;

plasticizing a high-density tablet of a thermosetting resin having a compressibility of not less than 95%;

injecting the plasticized resin into a space defined between the cavities of the upper and lower mold dies to cover the semiconductor device; and

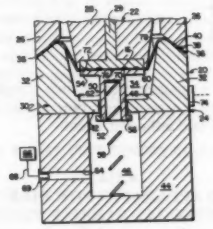
curing the injected resin.

4,554,127

METHOD FOR FORMING A PAPERBOARD RECEPTACLE

Paul O. Hain, Hamilton, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 16, 1980, Ser. No. 217,092
Int. Cl.[4] B29C *11/00*; B29D *31/00*
U.S. Cl. 264—324 **9 Claims**



1. A method of forming a paperboard receptacle having a bottom and side walls, which comprises

locating a paperboard blank between mating first and second dies;

moving said first die toward said second die to draw said blank into a receptacle; and

injecting steam into at least one of said dies and against a surface of said blank during drawing of said blank.

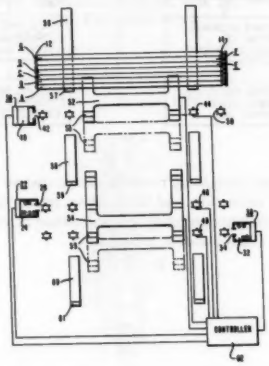
7. A method according to claim 1, wherein said steam is injected into said second die, and said second die is heated to a temperature between about 300° F. and 400° F.

4,554,128

NUCLEAR FUEL ROD END PLUG WELD INSPECTION

Merle A. Parker; George F. Rice, and Stanley S. Patrick, all of Columbia, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 1, 1983, Ser. No. 470,906
Int. Cl.[4] G21C *17/00*
U.S. Cl. 376—252 8 Claims



1. Apparatus for determining the integrity and composition of TIG welds of an end plug on a sealed nuclear reactor fuel rod, comprising:

(a) an ultrasonic weld inspection system for void detection with multiple transducers and having an immersion tank stuffing box with a seal for receiving said end plug on said fuel rod, said transducers disposed in said stuffing box to interrogate said welds of said end plug;

(b) means for longitudinally moving said end plug into and out from said stuffing box;

(c) an X-ray fluorescent spectrograph calibrated to detect tungsten and having a shielded counting chamber with an orifice for receiving said end plug on said fuel rod;

(d) means for axially moving said end plug into and out from said counting chamber;

(e) means for transporting said fuel rod between said stuffing box and said counting chamber; and

(f) means for controlling, in a predetermined manner, said end plug axial moving means, said X-ray fluorescent spectrograph, said fuel rod transporting means, said end plug longitudinal moving means, and said ultrasonic weld inspection system.

4,554,129

GAS-COOLED NUCLEAR REACTOR

Charles O. Peinado, La Jolla, and Stanley L. Koutz, San Diego, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 17, 1982, Ser. No. 359,161
Int. Cl.[4] G21C *15/18, 15/02*
U.S. Cl. 376—298 8 Claims

1. A gas-cooled nuclear reactor comprising

a concrete pressure vessel having a generally vertical cylindrical sidewall, an upper end wall and a lower end wall defining an internal compartment,

a tubular metal liner disposed adjacent to the interior wall of said concrete pressure vessel sidewall,

a nuclear fission reactor core located in a lower portion of said compartment having passageways therein for the flow of gas coolant from the bottom to the top thereof,

said core having a horizontal dimension less than the interior diameter of said concrete pressure vessel sidewall and being disposed therewithin to provide a generally annular region between said core and said sidewall,

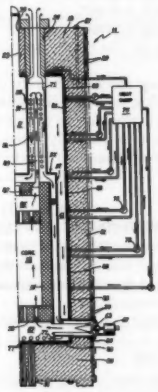
a tubular shroud located in said generally annular region spaced outward from said core to create both an inner passageway between said core and said shroud and an outer passageway between said shroud and said metal liner, said inner and outer passageways normally communicating with each other at the bottom of said compartment,

heat-exchange mean located vertically above said core for transferring heat from a primary gas coolant flowing upward through said core to a secondary fluid coolant circulated therethrough, said heat-exchange means having a normal exit means near the bottom thereof and being constructed so that said gas coolant enters at the bottom and normally travels first upward and then downward therein,

conduit means for directing high temperature gas coolant from the top of said core to said heat-exchange means,

said exit means from the bottom of said heat-exchange means normally communicating said heat exchange means to said inner passageway,

circulator means normally taking suction from said inner passageway for drawing gas coolant from said normal exit from said heat-exchange means through said inner passageway and delivering said gas coolant to the bottom of



said core for another pass upward therethrough, the coolant gas thereby being recirculated through a flow path entirely within said cylindrical internal compartment,

cooling tubes disposed in contact with the exterior surface of said metal liner,

said heat-exchange means also having emergency exit means near the top thereof, said emergency exit means being designed to open to a region above the core in direct contact with said metal liner and in communication with said outer passageway upon a predetermined rise in the temperature of said gas coolant,

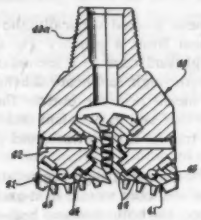
said reactor being designed so that upon a rise in the exit temperature of said gas coolant from said core as a consequence of the failure in performance of said circulator means and resulting opening of said emergency exit means, there results a natural convection flow of gas coolant upward through said core, then to the top of said heat-exchange means and through said emergency exit means, then downward through said outer passageway along and in direct contact with the interior surface of said metal liner to the bottom of said core and then upward therethrough, and

means for circulating coolant liquid through said cooling tubes at a sufficient rate to withdraw enough heat to prevent said core and said concrete pressure vessel from overheating.

4,554,130
CONSOLIDATION OF A PART FROM SEPARATE METALLIC COMPONENTS

Gunes M. Ecer, Irvine, Calif., assignor to CDP, Ltd., Newport Beach, Calif.

Filed Oct. 1, 1984, Ser. No. 656,641
Int. Cl.[4] B22F *3/14*
U.S. Cl. 419—8 32 Claims



1. A method of consolidating metallic body means which includes:
(a) applying to the body means surface a mixture of:
(i) metallic powder,
(ii) fugitive organic binder, and
(iii) volatile solvent,
(b) drying the mixture,
(c) burning out the binder and solvent at elevated temperature,
(d) immersing the heated body means in a heated granular bed of refractory material within a metal die, and
(e) applying a pressure to the granular bed, which transmits the pressure to the body means, until the said metal powder is consolidated and bonded to the said body means.

4,554,131
ALUMINUM BATTERY ALLOYS

David S. Thompson, Richmond, and Darwin H. Scott, Mechanicsville, both of Va., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Sep. 28, 1984, Ser. No. 655,486
Int. Cl.[4] C22C *21/08*
U.S. Cl. 420—546 11 Claims

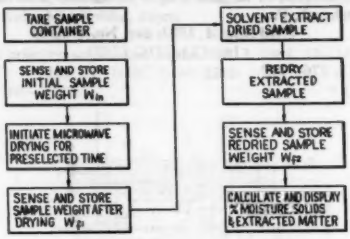
1. An aluminum alloy consisting essentially of about 0.02 to about 0.15 weight percent of iron, about 0.02 to about 0.30 weight percent of manganese, about 0.01 to about 0.07 weight percent of gallium, the balance being made of aluminum with its inherent impurities, wherein said iron and said aluminum are provided from a base aluminum material produced in a production aluminum reduction cell.

4,554,132
ANALYTICAL APPARATUS FOR DETERMINING VOLATILES, SOLIDS, AND SOLVENT EXTRACTABLES IN A SAMPLE

Michael J. Collins, Matthews, N.C., assignor to CEM Corporation, Indian Trail, N.C.

Continuation of Ser. No. 21,986, Mar. 19, 1979, abandoned. This application Nov. 29, 1982, Ser. No. 445,199
Int. Cl.[4] G01N *5/04, 22/00, 22/04, 25/14*
U.S. Cl. 422—68 9 Claims

1. An apparatus for quantitatively determining volatiles, solids and solvent extractables in a sample comprising in combination, automatic weighing means, sample holding means, microwave heating means, sample solvent extracting means, sample recovery means, recording and calculation means, said microwave heating means communicating with said sample holding means, said recording means being electrically connected to said weighing means to sense and record weights, said sample solvent extracting means communicating with said sample holding means and having means therewith to grind said sample holding means and means to recover the residue of ground sample holding means, and means for sequentially


TARE SAMPLE CONTAINER
SENSE AND STORE INITIAL SAMPLE WEIGHT W_{in}
INITIATE MICROWAVE DRYING FOR PRESELECTED TIME
SENSE AND STORE SAMPLE WEIGHT AFTER DRYING W_{fi}
SOLVENT EXTRACT DRIED SAMPLE
REDRY EXTRACTED SAMPLE
SENSE AND STORE REDRIED SAMPLE WEIGHT W_{fz}
CALCULATE AND DISPLAY % MOISTURE, SOLIDS & EXTRACTED MATTER

activating said weighing, recording, microwave heating, sample solvent extraction and calculating means in a predetermined sequence to determine the proportion of volatiles, solids and solvent extractables in a sample.

4,554,133
GAS MEASURING TESTING TUBE

Kurt Leichnitz, Gross Gronau, Fed. Rep. of Germany, assignor to Dräigerwerk A.G., Fed. Rep. of Germany

Filed Sep. 28, 1983, Ser. No. 536,515
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1983, 3236792
Int. Cl.[4] G01N *21/29*
U.S. Cl. 422—87 5 Claims

1. An indicator tube for detecting gaseous contaminants in air comprising:
a transparent indicator tube having an inner surface;
two longitudinally spaced gas permeable holders positioned within said tube;
granular fill material located within said tube between the gas permeable holders;
a reagent impregnated strip extending between said gas permeable holders, said strip further being positioned between the granular fill material and a portion of the inner surface of said tube whereby the granular fill material holds said strip tightly against the portion of the inner surface of said tube.

4,554,134

PIPETTE WITH ADJUSTABLE VOLUME

Jukka Tervamäki; Mikael Fagerstedt; Aarre Kukka, all of Helsinki, and Erkki Kaski, Luvia, all of Finland, assignors to Labsystems Oy, Helsinki, Finland

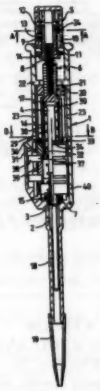
PCT No. PCT/FI83/00051, § 371 Date Feb. 2, 1984, § 102(e) Date Feb. 2, 1984, PCT Pub. No. WO84/00119, PCT Pub. Date Jan. 19, 1984

PCT Filed Jun. 21, 1983, Ser. No. 579,885

Claims priority, application Finland, Jun. 29, 1982, 822307

Int. Cl.[4] G01N *1/14*

U.S. Cl. 422—100 2 Claims



1. An improved pipette with adjustable dispensing volume comprising:

(a) a hollow frame portion forming a handle;

(b) a cylinder formed within said frame portion;

(c) a piston displaceably and sealably fitted within said cylinder;

(d) a piston rod coupled to said piston for displacing same;

(e) a threaded shaft disposed within said frame including an upper portion and a lower portion, the lower portion of said shaft engaging said piston rod to displace same;

(f) a calibration sleeve threaded to the upper portion of said threaded shaft to permit the total length of said sleeve and said threaded shaft to be adjusted by relative rotation thereof to thereby determine a lower limit of displacement of said piston;

(g) at least first and second coacting disc means coupled to said threaded shaft by a non-threaded sleeve attached thereto for reciprocal rotation between said disc means upon said relative rotation of said sleeve and said threaded shaft, said disc means having an upper, lower and peripheral surface, numerical indicia means disposed on the peripheral surface of said disc means for indicating calibrated dispensing volumes of said pipette and notches disposed on said upper surface of an uppermost one of said first and second disc means; and

(h) an annular spring disposed adjacent said uppermost of said disc means, said spring being non-rotatably fitted to said frame portion, said spring including globular projections for releaseable engagement with said notches on said upper surface of said uppermost disc means so as to releaseably lock said disc means at various radial positions.

4,554,135

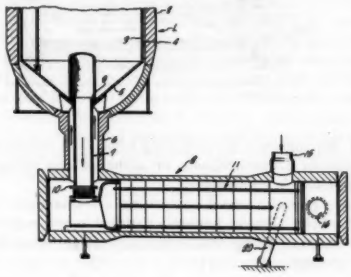
AMMONIA CONVERTER

Bernard J. Grotz, Pasadena; Fiske O. Parnkopf, Arcadia, and G. Robert Prescott, Newport Beach, all of Calif., assignors to C F Braun & Co., Alhambra, Calif.

Filed Nov. 26, 1982, Ser. No. 444,749

Int. Cl.[4] C01C *1/04*

U.S. Cl. 422—148 1 Claim



1. An apparatus for synthesizing ammonia comprising:

a vertical synthesis converter comprising a shell and a catalyst holder positioned within and spaced slightly from the shell to provide an annular passageway;

a channel fabricated of a material selected from the group consisting of 2¼-Cr-1-Mo and 3-Cr-1-Mo provided at the lower end of the shell adjacent the bottom of the catalyst holder;

a conduit approximately 1 to about 6 feet in length fabricated of a nickel alloy or stainless steel extending through the channel and connected to the catalyst holder through a gas collector pipe;

a horizontally disposed shell and tube heat exchanger with a tube bundle anchored within the heat exchange shell at the end nearest the converter so as to prevent lateral movement of the tube bundle within the heat exchange shell, the heat exchange shell being close coupled through the channel to the converter, the conduit being connected to a tube side of the heat exchanger through an expansion means which will take up thermal expansion resulting from the difference in the coefficient of expansion between the conduit and the channel;

a spring-loaded rocker arm supporting the end of the heat exchanger opposite the converter, said rocker arm being provided to allow for longitudinal movement of the heat exchanger shell due to thermal expansion from the anchored end of said heat exchanger, whereby ammonia synthesis feed gas may pass through the heat exchanger and the channel about the conduit and into the synthesis converter at a temperature between approximately 700° F. to about 750° F. and the synthesis effluent passes through said conduit to the tube side of said heat exchanger at a temperature between approximately 950° F. to about 1000° F.

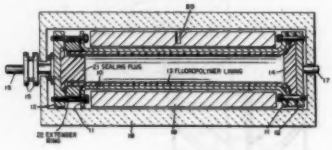
4,554,136
HYDROTHERMAL APPARATUS FOR SYNTHESIZING CRYSTALLINE POWDERS

Bruce H. Chai, Bridgewater; Ernest Buehler, Chatham, and John J. Flynn, Millington, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 315,778, Oct. 28, 1981, abandoned, which is a division of Ser. No. 230,077, Jan. 30, 1981, Pat. No. 4,324,773. This application Apr. 1, 1983, Ser. No. 481,208

Int. Cl.⁴ C30B *71/10*

U.S. Cl. 422—209 **3 Claims**



1. An apparatus for preparing crystalline powders of alpha-aluminum orthophosphate or alpha-gallium orthophosphate comprising in combination

(a) a pressure vessel comprising a substantially cylindrical tubular element having a shrinkable and reusable fluoropolymer lining that is initially longer than the tubular element,

(b) means for supporting the vessel with its cylinder axis in a substantially horizontal orientation,

(c) means for rotating the vessel about its cylinder axis,

(d) means for controlling temperatures in the vessel, and

(e) means for compensating for shrinkage in the flouropolymer liner, the compensating means comprising a sealing plug and a removable annular ring at one end of the vessel that sealingly support the liner, while permitting the liner to thermally expand and contract at the seal.

4,554,137
ENRICHMENT OF MINERALS BY FLOTATION AND COLLECTOR AGENTS EMPLOYED FOR THIS PURPOSE

Jacques Maurice; Patrice Guesnet, both of Pau; Pierre Tozzolino, Morlaas, and Guy Muller, Monein, all of France, assignors to Societe Nationale Elf Aquitaine (Production), France

Filed Oct. 13, 1983, Ser. No. 541,776

Claims priority, application France, Oct. 13, 1982, 8217128

Int. Cl.⁴ B03D *1/02*

U.S. Cl. 423—26 **7 Claims**

1. Process of enrichment of minerals by flotation with the aid of a collector consisting essentially of a polysulphide having two aliphatic hydrocarbon groups, wherein these groups are alkyl or alkenyl, one group having 2 to 12 carbon atoms and the other having 6 to 12 carbon atoms, and wherein the polysulphide is in the form of a solution in a solvent selected from the group consisting of alcohol, carbon disulphide, dimethyl sulphoxide, benzene and kerosene.

4,554,138
LEACHING METALS FROM SPENT HYDROPROCESSING CATALYSTS WITH AMMONIUM SULFATE

Paul J. Marcantonio, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 30, 1984, Ser. No. 666,519

Int. Cl.⁴ C01G *31/00, 39/00, 41/00, 51/00*

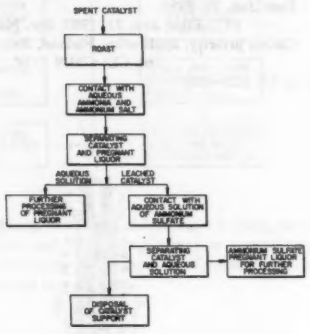
U.S. Cl. 423—53 **7 Claims**

1. A process to extract metals from spent hydroprocessing catalyst particles comprising:

(a) roasting said catalyst particles at a temperature in the range of between 400° C. and 600° C.;

(b) contacting said roasted catalyst particles with a first aqueous solution of ammonia and ammonium salt;

(c) separating said catalyst particles from said first aqueous solution;


SPENT CATALYST
ROAST
CONTACT WITH AQUEOUS AMMONIA AND AMMONIUM SALT
SEPARATING CATALYST AND PREGNANT LIQUOR
AQUEOUS SOLUTION
LEACHED CATALYST
FURTHER PROCESSING OF PREGNANT LIQUOR
CONTACT WITH AQUEOUS SOLUTION OF AMMONIUM SULFATE
SEPARATING CATALYST AND AQUEOUS SOLUTION
AMMONIUM SULFATE PREGNANT LIQUOR FOR FURTHER PROCESSING
DISPOSAL OF CATALYST SUPPORT

(d) contacting said catalyst particles with a second aqueous solution of ammonium sulfate at a pH in the range of from about 1 to 4; and

(e) separating said catalyst particles from said second solution.

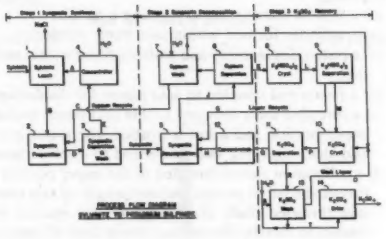
4,554,139
PROCESS FOR PRODUCING AND DECOMPOSING SYNGENITE

Ralph E. Worthington, Winter Haven, and Alex Magdics, Lakeland, both of Fla., assignors to Prodeco, Inc., Mulberry, Fla.

Division of Ser. No. 536,379, Sep. 27, 1983, abandoned. This application Jun. 7, 1984, Ser. No. 618,142

Int. Cl.⁴ C01D *5/02, 5/12*

U.S. Cl. 423—166 **10 Claims**



1. A process for decomposing syngenite comprising reacting said syngenite with an acid, said acid selected from the group consisting of those acids having a dissociation constant of at least 1.2×10^{-2} at a temperature and for sufficient time such that the syngenite decomposes to $CaSO_4$ and $KHSO_4$.

4,554,140
OFF-GAS DESULFURIZATION PROCESS

Yoshihiko Kudo, Iwaki, Japan, assignor to Kureha Chemical Industry Co., Ltd., Japan

Filed Aug. 28, 1984, Ser. No. 644,977

Claims priority, application Japan, Oct. 25, 1983, 58-199440

Int. Cl.⁴ C01B *17/00*

U.S. Cl. 423—243 **4 Claims**

1. In an off-gas desulfurization process which comprises contacting an off-gas containing sulfur dioxide with an absorb-

ing solution containing an organic carboxylate, and oxidizing the resulting absorbed solution with an oxygen-containing gas while neutralizing the absorbed solution with limestone to convert the sulfur dioxide in the off-gas into gypsum for removal, the improvement which comprises adding a thiocyanate at a concentration of from 50 to 1000 mg/kg as SCN^- to said absorbing solution containing the organic carboxylate.

4,554,141

GAS STREAM PURIFICATION

Herbert M. Scull, Baton Rouge, and Sebastian M. Laurent, Greenwell Springs, both of La., assignors to Ethyl Corporation, Richmond, Va.

Filed May 14, 1984, Ser. No. 609,812

Int. Cl.[4] C10H *23/00;* B01J *8/00;* C01B *33/04*

U.S. Cl. 423—245 **19 Claims**

1. A process for the purification of silane, said process comprising contacting silane contaminated with ethylene with a zeolite which has a pore structure that selectively removes ethylene and recovering the purified silane.

4,554,142

PROCESS FOR THE PREPARATION OF BOROSILICATE ZEOLITES

Wolfgang Höelderich; Wolf D. Mross, both of Frankenthal, and Matthias Schwarzmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 12, 1982, Ser. No. 433,899

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1981, 3140895

Int. Cl.[4] C01B *35/10*

U.S. Cl. 423—277 **8 Claims**

1. A process for the preparation of crystalline ZBH borosilicate zeolites of the pentasil type which comprises: adding silicon dioxide, boric acid and an alkali metal salt to a liquid ether or ether-water solvent wherein the ether is selected from the group consisting of monoethylene, diethylene, triethylene and tetraethylene glycol dimethyl ether, diethyl ether, a mixture of triethylene to decaethylene glycol methyl isopropyl ethers, diethylene glycol methyl isopropyl ether, a mixture of polyethylene glycol methyl isopropyl ethers, a mixture of oxyethylated oxoalcohols having a mean molecular weight of 200, 600 or 6,000, and dimethoxymethane, the molar ratio of SiO_2 to B_2O_3 being from 3 to 300, the molar ratio of alkali metal salt to B_2O_3 being from 1 to 3 and the molar ratio of ether to B_2O_3 being from 18 to 390, and thereafter heating the resultant solution to a temperature of from 80° to 140° C. in a closed vessel under autogenous pressure to form said ZBH borosilicate zeolites, wherein the zeolites have the formula

$$M_{2/n}O:B_2O_3:x\ SiO_2:y\ H_2O$$

where N is one or more cations of valency n, x is $\geqq 10$ and y is from 0 to 80.

4,554,143

CRYSTALLINE FERROALUMINOPHOSPHATES

Celeste A. Messina, Ossining; Brent M. Lok, New City, and Edith M. Flanigen, White Plains, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 15, 1983, Ser. No. 514,335

Int. Cl.[4] C01B *25/45;* B01J *27/18*

U.S. Cl. 423—306 **19 Claims**

1. Crystalline ferroaluminophosphate having a three-dimensional microporous framework structure of FeO_2, AlO_2 and PO_2 tetrahedral units and having an empirical chemical composition on an anhydrous basis expressed by the formula

$$mR:(Fe_xAl_yP_z)O_2$$

wherein "R" represents at least one organic templating agent present in the intracrystalline pore system; "m" represents the moles of "R" present per mole of $(Fe_xAl_yP_z)O_2$ and has a value of from zero to 0.3, "x", "y and "z" represent the mole fraction of the iron, aluminum and phosphorus respectively present as tetrahedral oxides, said mole fractions being such that they are within the tetragonal compositional area defined by points A, B, C and D of the ternary diagram which is FIG. 1 of the drawings.

11. Process for preparing a crystalline ferroaluminophosphate of claim 1 which comprises providing a reaction mixture composition expressed in terms of molar oxide ratios as follows:

$$aR_2O:(Fe_xAl_yP_z)O_2:bH_2O$$

wherein "R" is an organic templating agent; "a" has a value great enough to constitute an effective concentration of "R" and is within the range of greater than zero to 3; "b" has a value of from zero to 500, preferably 2 to 80; "x", "y" and "z" represent the mole fractions, respectively, of iron, aluminum and phosphorus in the $(Fe_xAl_yP_z)O_2$ constituent, and each has a value of at least 0.01, and being within the hexagonal compositional area defined by points E, F, G, H, I, and J which is FIG. 3 of the drawings and maintaining said reaction mixture under conditions whereby crystals of said ferroaluminophosphate are formed.

4,554,144

REMOVAL OF MAGNESIUM AND/OR ALUMINUM VALUES FROM IMPURE AQUEOUS PHOSPHORIC ACID

Fernando Ore', Whittier, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Continuation of Ser. No. 476,691, Mar. 18, 1983, abandoned. This application Jan. 6, 1984, Ser. No. 568,707

Int. Cl.[4] C01B *25/16*

U.S. Cl. 423—321 R **14 Claims**

1. A process for removing dissolved aluminum and magnesium from impure aqueous phosphoric acid containing dissolved aluminum, iron, silicon, fluorine and magnesium values, said process comprising

(a) adding a fluorine-containing compound selected from the group consisting of calcium fluoride, synspar, and sodium fluoride and a sodium-containing compound selected from the group consisting of sodium fluoride, sodium carbonate, sodium hydroxide and sodium sulfate to said impure aqueous phosphoric acid in amounts effective to cause the formation of a solid compound comprising sodium, aluminum, magnesium and fluorine; and

(b) separating said solid compound from said impure aqueous phosphoric acid to obtain an aqueous phosphoric acid containing less aluminum and magnesium than did said impure aqueous phosphoric acid.

4,554,145

PREPARATION OF CRYSTALLINE SILICATE ZEOLITE BETA

Mae K. Rubin, Bala Cynwyd, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 16, 1984, Ser. No. 600,681

Int. Cl.[4] C01B *33/28*

U.S. Cl. 423—328 **12 Claims**

1. A method for synthesizing a crystalline silicate having a composition in the anhydrous state, expressed in terms of mole ratios of oxides, as follows:

$$(1\text{ to }25)R_2O:(0\text{ to }0.8)M_{2/n}O:Al_2O_3:(x)SiO_2$$

wherein M is at least one alkali metal cation having the valence n, R is dibenzyl-1,4-diazabicyclo[2.2.2]octane and x is from about 5 to greater than about 200, and exhibiting a characteristic X-ray diffraction pattern as shown in Table 1 of the specification, which comprises preparing a mixture containing

sources of alkali metal oxide, an oxide of aluminum, an organic nitrogen-containing cation, an oxide of silicon and water and having a composition, in terms of mole ratios, within the following ranges:

SiO_2/Al_2O_3	5–250
H_2O/SiO_2	10–100
OH^-/SiO_2	0.09–0.8
$R/(R + M)$	0.1–0.8

wherein M and R are as above defined, and maintaining the mixture at a temperature of from about 80° C. to about 150° C. until crystals of the crystalline silicate are formed.

6. A synthetic crystalline silicate having a composition in the anhydrous state, expressed in terms of mole ratios of oxides, as follows:

$$(1 \text{ to } 25)R_2O:(0 \text{ to } 0.8)M_{2/n}O:Al_2O_3:(x)SiO_2$$

wherein M is at least one alkali metal cation having the valence n, R is dibenzyl-1,4-diazabicyclo[2.2.2]octane and x is from about 5 to greater than about 200, and exhibiting a characteristic X-ray diffraction pattern as shown in Table 1 of the specification.

4,554,146

PROCESS FOR PREPARING A ZEOLITE OF THE L TYPE USING ORGANIC TEMPLATES

David E. Vaughan, Flemington, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 10, 1983, Ser. No. 550,895
Int. Cl.[4] C01B *33/28*
U.S. Cl. 423—329 **15 Claims**

1. A process for synthesizing a crystalline, potassium-containing zeolite having a $(Si,Ge)O_2$ to $(Al,Ga)_2O_3$ ratio of from 3 to 7 and an X-ray powder diffraction pattern which is essentially that given in Table I which comprises:

(a) preparing a reaction mixture comprising water, potassium silicate, optionally a source of germania, a source of alumina or gallia, a tetraalkylammonium salt wherein the cation is a tetraethylammonium, tetrapropylammonium, tetrabutylammonium, or bis-(2-hydroxyethyl)dimethylammonium cation, a source of potassium, and up to about 40% by mole fraction of a source of sodium based on total sources of potassium and sodium, said reaction mixtures having a composition, in terms of mole ratios of oxides, within the following ranges:

$(M,R)_2O:(Al,Ga)_2O_3$: 1.4 to 4
$(Si,Ge)_2O:(Al,Ga)_2O_3$: 2.5 to 15
$H_2O:(Al,Ga)_2O_3$: 90 to 200
$R_2O:M_2O$: 0.05 to 0.5

where M is K or a mixture of K and Na, and R is the tetraalkylammonium cation; and

(b) maintaining the reaction mixture, while it is substantially homogeneous, at between about 70° and 260° C. for between about 1 and 10 days until substantially pure crystals of said zeolite are formed.

4,554,147

METHOD FOR TREATING FUMED SILICA

Robert W. Stoll, Schenectady, and Michael R. MacLaury, Rexford, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 2, 1984, Ser. No. 595,766
Int. Cl.[4] C01B *33/18*
U.S. Cl. 423—335 **1 Claim**

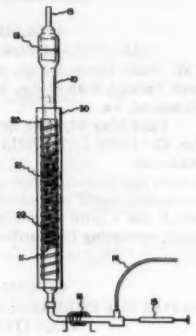
1. A method for treating silanol-containing fumed silica having up to about 5.3 silanol radicals/nm^2 to substantially reduce its silanol level which comprises

(I) contacting the silanol-containing fumed silica, while in a fluidized state, at a temperature in the range of from about 300° C. to about 600° C. with a mixture of

(a) dimethyldichlorosilane

(b) hydrochloric acid having a concentration of about 7.4% of HCl, and

(c) surfactant having the formula,



$$C_{8\text{-}10}F_{17\text{-}21}SO_3^-K^+,$$

where there is used from 1 to 10 moles hydrochloric acid and 10^{-5} to 10^{-3} moles of surfactant, per mole of dimethyldichlorosilane.

4,554,148

PROCESS FOR THE PREPARATION OF CARBON FIBERS

Shimpei Gomi, Tokyo; Tomio Arai, Zushi; Fumio Mogi, Tokyo; Kunio Miura, Chiba, and Sugio Otani, Kiryu, all of Japan, assignors to Fuji Standard Research, Inc., Japan

Filed May 17, 1984, Ser. No. 611,152
Claims priority, application Japan, May 20, 1983, 58-88775
Int. Cl.[4] D01F *9/12*
U.S. Cl. 423—447.1 **4 Claims**

1. A process for the preparation of carbon fibers, comprising the steps of:

subjecting a raw material oil to thermal cracking conditions at a temperature of between 400° and 500° C. while removing cracked, light hydrocarbon components to obtain a pitch product containing 5–40 weight % of mesophase and not more than 10 weight % of light hydrocarbon components with a boiling point at 60 mmHg (absolute) of 300° C. or less and having a softening point of between 140° and 220° C., the raw material oil having a boiling point of at least 500° C. and containing at least 30 weight % of a residual oil which has a boiling point of at least 50° C. and a metal content of at least 200 weight ppm and which is obtained from fractionation of naphthene base and/or intermediate base petroleum crude;

removing the mesophase having a particle size of more than 10 μm from the pitch product to obtain a substantially mesophase-free carbonaceous pitch;

spinning the substantially mesophase-free pitch into fibers;

rendering the spun fibers infusible; and

carbonizing the infusible fibers.

4,554,149

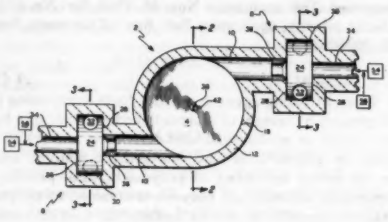
METHOD FOR PRODUCING CARBON BLACK

Paul J. Cheng, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 29, 1983, Ser. No. 518,704
Int. Cl.[4] C01B *31/02*; C09C *1/48*
U.S. Cl. 423—450 **4 Claims**

1. A method for changing the tint residual of a carbon black product having a selected CTAB surface area in the range of

50 to about 150 m^2/g and a tint residual in the range of −10 to about +10, said carbon black being produced by a reactor by charging oxygen and air to provide oxygen-enriched air having a molecular oxygen content in the range of 25 to 35 volume percent and gaseous fuel having a heating value in the range of 60–125 BTU/SCF for combustion to form the combustion



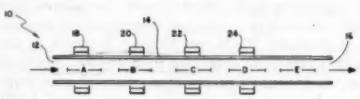
gases and carbonaceous feedstock for pyrolysis by the combustion gases to form carbon black comprising changing in a first direction the oxygen rate, the fuel rate and the carbonaceous feedstock rate and changing in a second direction the air rate so that the carbon black being produced exhibits about the selected surface area, whereby the tint residual of the carbon black product is changed in the second direction.

4,554,150

DETECTOR GRADE MERCURIC IODIDE

James M. Whelan, La Canada, Calif., assignor to University of Southern California, Los Angeles, Calif.

Filed Oct. 14, 1983, Ser. No. 542,250
Int. Cl.⁴ C01B 9/00
U.S. Cl. 423—491 **13 Claims**



1. A method for the purification of mercuric iodide containing metallic impurities, organic residues and oxygen containing mercury compounds, comprising vaporizing the impure mercuric iodide in an inert gas stream and oxidizing metallic impurities and organic residues by providing, in the inert gas stream, oxygen sufficient to form an oxygen partial pressure sufficient to oxidize the metallic and organic impurities and inhibiting the oxidation of mercuric iodide to mercury oxide, and converting oxygen containing mercury compounds to mercuric iodide, by adding to the gas stream an iodine vapor concentration greater than that of the oxygen, and separating the purified mercuric iodide from the impurities by gradient crystallization.

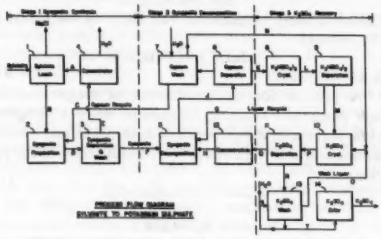
4,554,151

PROCESS FOR PRODUCING $K_3H(SO_4)_2$ CRYSTALS AND POTASSIUM SULFATE CRYSTALS

Ralph E. Worthington, Winter Haven; Alex Magdics, and Donald B. Stain, both of Lakeland, all of Fla., assignors to Prodeco, Inc., Mulberry, Fla.

Filed Sep. 27, 1983, Ser. No. 536,378
Int. Cl.⁴ C01D 5/02, 5/12
U.S. Cl. 423—551 **6 Claims**

1. A process for producing K_2SO_4, comprising:
(a) forming syngenite;
(b) decomposing the syngenite formed in step (a) with sulfuric acid to produce a solution of K^+, H^+, and sulfate and bisulfate ions expressed as $SO_4^=$ in a molar ratio of 1:1:1 and solid calcium sulfate or the penta salt;
(c) separating the solution produced in step (b) at the reaction temperature from the solid calcium sulfate or penta salt;
(d) controlling the concentration of said solution as produced in step (b) such that when the solution is cooled to a first temperature of about 0° to 45° C. a double salt $K_3H(SO_4)_2$ crystallizes;
(e) cooling the $KHSO_4$ solution produced in step (d) to the first predetermined temperature and separating the $K_3H(SO_4)_2$ crystals thus produced;



(f) forming K_2SO_4 by contacting the separated $K_3H(SO_4)_2$ crystals separated in step (d) with water or a recycled aqueous wash liquor containing water and low concentrations of K^+, H^+ and sulfate and bisulfate ions at a second temperature in the range of about 0° to 100° C. but above that of step (d) such that the crystalline phase in equilibrium is K_2SO_4; and
(g) recovering K_2SO_4.

4,554,152

METHOD OF PREPARING ACTIVE MAGNESIUM-HYDRIDE OR MAGNESIUM HYDROGEN-STORER SYSTEMS

Borislav Bogdanovic, Mülheim, Fed. Rep. of Germany, assignor to Studiengesellschaft Kohle mbH, Mülheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 433,078, Oct. 6, 1982, abandoned, which is a continuation-in-part of Ser. No. 187,907, Sep. 17, 1980, abandoned, which is a continuation of Ser. No. 8,739, Feb. 2, 1979, abandoned. This application Jun. 1, 1983, Ser. No. 500,070

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247360

Int. Cl.⁴ C01B 6/04
U.S. Cl. 423—647 **19 Claims**

1. A method of preparing an active magnesium hydride which can reversibly give off and take up H_2, comprising contacting finely divided magnesium hydride with a solution of a transition metal organic compound, said transition metal being of Subgroups IV–VIII of the Periodic Table, and then removing the solution.

11. A method of preparing an active magnesium-hydride, comprising contacting finely divided metallic magnesium with a solution of a transition metal-organic compound, said transition metal being of Subgroups IV–VIII of the Period Table, removing the solvent, and then contacting the magnesium with hydrogen.

4,554,153

PROCESS FOR THE PRODUCTION OF MAGNESIUM HYDRIDES

Borislav Bogdanovic, Mülheim, Fed. Rep. of Germany, assignor to Studiengesellschaft Kohle mbH, Mulheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 433,078, Oct. 6, 1982, abandoned, which is a continuation-in-part of Ser. No. 187,907, Sep. 17, 1980, abandoned, which is a continuation of Ser. No. 8,739, Feb. 2, 1979, abandoned. This application Jul. 2, 1984, Ser. No. 626,819

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1978, 2804445

Int. Cl.[4] C01B *6/04*

U.S. Cl. 423—647 9 Claims

1. A process for the production of magnesium hydride which comprises reacting magnesium with hydrogen in an organic solvent in the presence of anthracene and a halide of a transition metal of the IVth to VIIIth sub group of the periodic system.

4,554,154

DENTAL PRODUCT AND METHOD OF DENTAL TREATMENT

Maurice J. E. White, 87 Lewis Rd., Wantirna South 3152, Victoria, Australia

Filed Mar. 12, 1984, Ser. No. 588,920

Claims priority, application Australia, Mar. 15, 1983, PF8450

Int. Cl.[4] A61C *15/00*

U.S. Cl. 424—16 8 Claims

1. A method of dental treatment comprising flossing between the teeth with a dental product that comprises chewable plastics tape carrying a biologically acceptable adhesive containing one or more of remineralizing, immunological and anti-bacterial agents, chewing the tape to allow the adhesive to control release into saliva of the agent or agents, and rubbing the gum margins of tooth surfaces with the masticated fibres of the tape, the chewing and rubbing steps causing adhesive to coat the teeth and gum margins to inhibit the attachment of plaque.

4,554,155

CONTROLLED RELEASE COMPOSITIONS

George G. Allan, Seattle, Wash., and Amar N. Neogi, Greenville, N.C., assignors to Washington Research Foundation, Seattle, Wash.

Continuation of Ser. No. 434,083, Jan. 17, 1975, abandoned. This application Dec. 15, 1975, Ser. No. 640,428

Int. Cl.[4] A01N *25/08, 25/34*

U.S. Cl. 424—22 15 Claims

1. A solid, controlled release, biologically active pesticide material delivery composition for release of the biologically active pesticide material over an extended period of time into the surrounding environment by molecular diffusion of the biologically active pesticide material through the matrix of the composition from the surfaces of the composition exposed to the environment, the composition consisting essentially of:

a solid solution of kraft lignin and a biodegradable water-insoluble organic polymer which is soluble in the biologically active pesticide material in a diffusible component which includes a biologically active pesticide material non-reactive with the organic polymer, the diffusible component present at least a 15 wt.% concentration in the composition that when the outer surfaces of the composition are exposed to the environment, the diffusible component, including the biologically active pesticide material, escapes from the composition, resulting in loss of the structural integrity and disintegration of the outer surfaces only of the composition to expose new, undisintegrated surfaces of the composition containing the diffusible component for further release thereof.

4,554,156

WOUND TREATING AGENT

Herbert Fischer, Burg; Botho Kickhöfen, Freiburg, and Ekkehard Vaubel, West Berlin, all of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur, Fed. Rep. of Germany

Continuation of Ser. No. 561,126, Dec. 13, 1983, abandoned, which is a continuation of Ser. No. 304,479, Sep. 22, 1981, abandoned. This application Nov. 26, 1984, Ser. No. 674,366

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1980, 3036033

Int. Cl.[4] A61K *31/78*

U.S. Cl. 424—81 21 Claims

1. Wound treating agent in powder form, comprising (a) 50 to 90 percent by weight of a cross-linked polymer of a hydrophilic acrylic or methacrylic acid derivative, and (b) 10 to 50 percent by weight of at least one gellable material selected from the group consisting of polysaccharides, proteins and polypeptides, wherein said polymer is obtained by polymerizing said hydrophilic acrylic or methacrylic acid derivative in the presence of an aqueous solution of component (b) and about 0.5 to about 5 mol percent of a cross-linking agent per mole of monomer employed.

4,554,157

HEPATITIS B VACCINE

Jacinta Skelly, Cardiff, Wales; Colin R. Howard, Tring, and Arie J. Zuckerman, London, both of England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 341,142, Jan. 20, 1982, abandoned. This application May 29, 1984, Ser. No. 614,714

Claims priority, application United Kingdom, Jan. 29, 1981, 8102739

Int. Cl.[4] A61K *39/29*

U.S. Cl. 424—89 11 Claims

1. In a process for the production of a protein fraction, suitable for use in the formulation of a vaccine against hepatitis B virus infection, which comprises treating serum originating particles of diameter 20–25 nm bearing hepatitis B surface antigen with a non-ionic detergent followed by affinity chromatography to produce a preparation comprising an immunogenic glycopolypeptide of molecular weight about 28,000 (gp 28) and an immunogenic polypeptide of molecular weight about 23,000 (p 23), the improvement which comprises introducing the preparation comprising gp 28 and p 23 and detergent to form a layer on top of an aqueous solution buffered to a pH which avoids denaturation of gp 28 and p 23, said aqueous buffer containing sucrose in a concentration gradient of at least 20% to not more than 65% weight/volume, centrifuging the layered buffer and recovering from the buffer an immunogenic aqueous fraction substantially free from detergent and containing micelles of gp 28 and p 23.

4,554,158

MODIFIED LIVE SENDAI VIRUS VACCINE FOR ADMINISTERING THROUGH AN AEROSOL AND METHOD OF PRODUCING THE SAME

James D. Russell, Gilroy, Calif., assignor to Simonsen Laboratories, Inc., Gilroy, Calif.

Filed Apr. 7, 1983, Ser. No. 482,899

Int. Cl.[4] A61K *39/12;* C12N *7/08*

U.S. Cl. 424—89 11 Claims

1. A vaccine for immunization against Sendai disease comprising live Sendai viruses modified and diluted by a first plurality of passages through incubated culture medium for providing a cold strain of live modified Sendai virus fluid, said incubated culture medium being maintained at an incubation temperature in the range between 25° C. and 35° C. to provide a cold strain of live modified Sendai virus fluid, the incubation period for each of said first plurality of passages being in the range between 48 and 96 hours.

2. A vaccine for immunization against Sendai disease ac-

cording to claim 1 wherein said cold strain of modified Sendai viruses are further modified by a second plurality of passages through incubated culture medium for harvesting, said last mentioned culture medium being maintained at an incubation temperature in the range between 38° C. and 40° C., the incubation period for each of said last mentioned passages being in the range between 48 and 96 hours.

7. A method of administering a vaccine for the immunization against Sendai disease comprising the steps of:

(a) providing a vaccine comprising cold strains of modified live Sendai viruses; and

(b) administering said vaccine through an aerosol.

4,554,159

VACCINE AND METHOD OF IMMUNIZING AGAINST HERPES SIMPLEX VIRUS (TYPES 1 AND 2)

Bernard Roizman, Chicago, Ill., and M. Robert Lang, Caluire et Cuire, France, assignors to Institute Merieux, Lyons, France

Filed Nov. 12, 1981, Ser. No. 320,760

Int. Cl.⁴ A61K *39/245*

U.S. Cl. 424—89 **31 Claims**

1. A live viral vaccine which is effective against wild-type HSV-1 and HSV-2, said vaccine comprising an immunity-including dose of at least one vaccinal intertypic (HSV-1×HSV-2) recombinant virus strain, said strain being prepared by the method comprising the steps of:

(a) crossing two prototypical HSV-1 and HSV-2 parental virus strains to obtain recombinant progeny, said parental strains having distinguishing genetic markers such that said recombinant progeny can be distinguished from said parental strains on the basis of said markers, at least one of said parental strains being distinguished by a temperature sensitive phenotype;

(b) identifying recombinant progeny distinguished by a temperature resistant phenotype;

(c) isolating said recombinant progeny of (b) from said parental strains and from recombinant progeny having a temperature sensitive phenotype; and,

(d) selecting from said temperature resistant progeny those strains which exhibit vaccinal characteristics with respect to wild-type HSV-1 and HSV-2.

4,554,160

PENICILLIN ESTERS, SALTS THEREOF AND METHODS FOR THEIR PREPARATION

Wagn O. Godtfredsen, Vaerlose, Denmark, assignor to Lovens Kemiske Fabrik Produktionsaktieselskab, Denmark

Division of Ser. No. 243,855, Apr. 13, 1972, Pat. No. 3,869,449. This application Mar. 3, 1975, Ser. No. 554,423

Int. Cl.⁴ A61K *35/00*

U.S. Cl. 424—114 **1 Claim**

1. A method of treating bacterial infection in a warm blooded animal which comprises providing a 1:1 mixture of mecillinam and benzylpenicillin to the warm blooded animal.

4,554,161

DERMATIC MEDICAMENT

Shinei Kashiwayama, No. 558 Iwasak, Kamitonda-machi, Nishimuro-gun, Japan

Division of Ser. No. 261,167, Apr. 27, 1981, Pat. No. 4,503,041. This application Feb. 9, 1984, Ser. No. 578,308

Claims priority, application Japan, Sep. 1, 1979, 54-112294

Int. Cl.⁴ A61K *35/72*

U.S. Cl. 424—115 **2 Claims**

1. A dermatic medicament consisting solely of or comprising as a main ingredient a culture product or culture liquid of a novel strain, Trichosporon Kashiwayama strain (deposited at FRI with deposition No. 4821), which is a strain belonging to the genus Geotricum or Endomycopsis, a cell-removed sterile liquid, sterile filtrate or sterile supernatant of said culture product or liquid, or a concentrate or dry product thereof.

4,554,162

CL-1724 ANTIBIOTIC COMPOUNDS, THEIR PRODUCTION AND USE

Cynthia A. Young; John P. Schaumberg, both of Ypsilanti; Gerard C. Hokanson; James C. French, both of Ann Arbor, and Josefino B. Tunac, Troy, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 4, 1984, Ser. No. 607,056

Int. Cl.⁴ A61K *35/74*; **C12P** *1/06*

U.S. Cl. 424—117 **4 Claims**

1. The compound designated CL-1724B-2 possessing antimicrobial activity; compound CL-1724B-2 characterized by:

a molecular weight of 1374 atomic mass units; an elemental analysis corresponding to 52.4% C, 6.26% H, 4.08% N, 9.32% S, 27.94% O;

an ultraviolet absorption spectrum in methanol showing absorption maxima at 318 nm (a=8.12), 280 nm (a=11.16), 251 nm (a=18.64), and 204 nm (a=29.84);

an infrared absorption peaks at 3520, 2940, 1760, 1720, 1685, 1600, 1580, 1520, 1450, 1385, 1375, 1310, 1250, 1155, 1075, 1015, 1000, 955, 900, 875, and 850 reciprocal centimeters;

a 300 MHz proton magnetic resonance spectrum in deuterochloroform exhibiting principal signals at 0.90 (multiplet), 1.25 (singlet), 1.40 (multiplet), 1.45–2.20 (multiplet), 2.30 (multiplet), 2.40–2.90 (multiplet), 3.30–4.30 (multiplet), 4.50 (multiplet), 4.70 (doublet of doublets), 4.95 (doublet), 5.35 (singlet), 5.45 (doublet), 5.70 (multiplet), 5.80 (doublet), 5.90 (doublet), 6.25 (singlet), 6.55 (multiplet), 7.75 (singlet), 8.65 (singlet), 12.95 (singlet), all signals measured in parts per million downfield from tetramethylsilane.

4,554,163

METHOD OF CONTINUOUS EXTRACTION OF PARTICULATE SOLID MATERIAL

Klaus Weber, Hamburg, Fed. Rep. of Germany, assignor to Extraktionstechnik Gesellschaft Für Anlagenbau mbH, Hamburg, Fed. Rep. of Germany

Filed Aug. 2, 1983, Ser. No. 520,443

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1982, 3228927

Int. Cl.⁴ A61K *35/78*

U.S. Cl. 424—195.1 **6 Claims**

1. A method of continuous extraction of particulate solid material, particularly vegetable raw material, with a highly compressed gas as a solvent selected from the group consisting of health-acceptable non-explosive gases, ethylene, propane, butane and isobutane, the method comprising the steps of

forming a suspension by mixing a solid material with a liquified gas selected from the group consisting of health-acceptable non-explosive gases, ethylene, propane, butane and isobutane in a suspension container under pressure which is lower than an extraction pressure;

compressing the suspension to an extraction pressure greater than 10 bar and bringing to an extraction temperture;

supplying the suspension into an extraction container in which fresh solvent is supplied in a counterstream to the solid material and from which an oil solution is withdrawn and thereafter the extracted solid material suspended in the liquified gas is withdrawn from the extraction container; and

continuously separating from the gas the withdrawn extract-poor solid material and discharging the latter.

4,554,164

PARENTERAL FORMULATION

Joyce L. DeYoung, Wayne, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Sep. 28, 1984, Ser. No. 656,062

Int. Cl.⁴ A61K *31/135*

U.S. Cl. 514—649 **5 Claims**

1. A parenterally acceptable, aqueous composition compris-

ing from 0.05 to about 0.5 percent weight/volume of an antioxidant selected from the group consisting of monothioglycerol (NF), sodium bisulfite, sodium bisulfite and disodium ethylenediamine-tetraacetic acid, and disodium ethylenediamine-tetraacetic acid and monothioglycerol (NF); from 0.5 to about 2.0 percent weight/volume of a buffer selected from the group consisting of lactate, tartrate, citrate and acetate buffer systems, to afford a pH of from about 3 to about 4.5; from 0 to about 0.01 percent weight/volume of benzethonium chloride; from about 20 to about 40 percent weight/volume of propylene glycol (USP); and from about 1.0 to about 10.0 percent weight/volume of a pharmaceutically acceptable acid addition salt of 1-cis-2(α-dimethylamino-m-hydroxybenzyl)-cyclohexanol.

4,554,165

METHOD OF MAKING CHEESE WITH PROTEINASE NEGATIVE LACTIC BACTERIA

Gary H. Richardson, Logan, Utah, assignor to Utah State University Foundation, Logan, Utah

Filed Jul. 22, 1982, Ser. No. 400,653
Int. Cl.⁴ A23C *19/02*; C12N *1/20*
U.S. Cl. 426—36 **35 Claims**

1. A method for making Cheddar cheese using proteinase negative lactic bacteria, comprising the steps of:

preparing a culture of proteinase negative lactic bacteria of sufficient population to serve as an inoculant for making Cheddar cheese, said population comprising from about 5×10^9 to about 5×10^{10} cells per milliliter and essentially all of the lactic bacteria in the culture being proteinase negative lactic bacteria, said method being carried out with essentially no addition of proteinase positive lactic bacteria before formation of cheese curd;

introducing the culture of proteinase negative lactic bacteria and a Cheddar cheese making enzyme into a vessel containing a quantity of milk, further growth of the proteinase negative lactic bacteria being substantially inhibited by introduction of the proteinase negative lactic bacteria culture into the milk within the vessel; and

allowing the enzyme to act on the milk to produce a Cheddar cheese curd.

19. A method for making cottage cheese using proteinase negative lactic bacteria, comprising the steps of:

preparing a culture of proteinase negative lactic bacteria of sufficient population to serve as an inoculant for making cottage cheese, said population comprising from about 5×10^9 to about 5×10^{10} cells per milliliter and essentially all of the lactic bacteria in the culture being proteinase negative lactic bacteria, said method being carried out with essentially no addition of proteinase positive lactic bacteria before formation of cheese curd;

introducing the culture of proteinase negative lactic bacteria and a cottage cheese making enzyme into a vessel containing a quantity of milk, further growth of the proteinase negative lactic bacteria being substantially inhibited by introduction of the proteinase negative lactic bacteria culture into the milk within the vessel; and

allowing the enzyme to act on the milk to produce a cottage cheese curd.

4,554,166

EXTRUSION PROCESS FOR SHRIMP OR CRABMEAT ANALOG PRODUCTS IN A SERIES OF NON-BOILING GELLING BATHS

Keisuke Morimoto, Congers, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Filed Mar. 15, 1984, Ser. No. 589,828
Int. Cl.⁴ A23J *3/00*
U.S. Cl. 426—276 **22 Claims**

1. In a process for the formation of a fibrous material useful in the formation of shrimp or crabmeat analog therefrom which is subject to freeze-thaw cycling by extruding an aqueous solution of protein and alginate into a gelling bath, the improvement which comprises:

(a) using only protein which has a solubility of less than about 10% in a gelling bath;

(b) extruding said solution into a first gelling bath having a high gelling agent cation concentration, in the range from about 0.18 to about 0.36 weight %, adapted to readily form a stable surface film on the extrudate;

(c) transferring said extrudate into a second gelling bath having a gelling agent cation concentration in the range from about 0.036 to about 0.108 weight % and for a period of time sufficient to permit diffusion of said cation throughout said extrudate; and

(d) recovering, freezing and thawing said extrudate.

4,554,167

METHOD FOR AGGLOMERATING ASPARTAME AND ACID-CONTAINING MIXES

Richard M. Sorge, Lakewood; Ronald W. Ponzoni, Nutley, and Myron D. Shoaf, Cranbury, all of N.J., assignors to General Foods Corp., White Plains, N.Y.

Filed Jun. 14, 1984, Ser. No. 620,414
Int. Cl.⁴ A23L *1/236, 2/00*
U.S. Cl. 426—285 **12 Claims**

1. A method for producing a stable, freeflowing agglomerate of aspartame and a food acid comprising the steps of:

(a) blending at least about 0.5% by weight aspartame and at least 30% by weight of a food acid selected from the group consisting of anhydrous citric acid, malic acid and combinations thereof, said blend being free of ingredients which melt at or below 200° F. and said blend having an available moisture content of below 8% by weight;

(b) applying heat to the blend to raise the blend temperature to between 140° and 200° F. and maintaining the blend temperature within said range for a period of time effective to agglomerate the blend without the addition of added moisture; and

(c) cooling the agglomerated blend.

4,554,168

METHOD FOR PRODUCTION OF SEMI-FLUID FRUIT COMPOSITION

Robert E. Gunnerson, Manteca, Calif., assignor to Sun-Diamond Growers of California, Stockton, Calif.

Continuation of Ser. No. 465,398, Feb. 10, 1983, abandoned. This application Nov. 19, 1984, Ser. No. 672,770
Int. Cl.⁴ A23B *7/00*; A23N *4/04*
U.S. Cl. 426—473 **5 Claims**

1. A process for the formation of a semi-fluid fruit composition from drupaceous fruits other than plums, consisting essentially of:

exposing said fruits to air containing at least about 2000 ppm sulfur dioxide by weight under atmospheric conditions for at least about four hours,

dehydrating said fruits whole with stones and skins intact to reduce the water activity thereof to about 1.0 or less,

passing said whole dehydrated fruits through a perforated conduit by a conveyor screw disposed therein, said conveyor screw having progressively decreasing conveying capacity in the direction of flow, to force said fruits forward while compressing said fruits radially against the wall of said conduit to force therethrough a fruit mixture substantially free of solids, and

recovering said fruit mixture.

4,554,169

PROCESS FOR PREPARED, GELATIN-CONTAINING FOOD PRODUCTS

Noel E. Anderson, Portage, Mich.; Donald E. Fletcher, Equing; Michael S. Smagula, Plainsboro, all of N.J., and Darrell S. Parker, Avon, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 13, 1985, Ser. No. 711,420
Int. Cl.[4] A23L *1/04*
U.S. Cl. 426—576 5 Claims

1. A process for preparing gelatin-containing, ready-to-eat food product comprising the steps of:

(a) combining particles of crystalline gelatin and water to form a uniform suspension of partially-hydrated gelatin particles, said water having a temperature of from 32° to 90° F., said gelatin being present at a level of from 0.01 to 20% by weight of the water, and said uniform suspension being effected by means of high shear mixing;

(b) maintaining the suspension at a temperature between 32° and 90° F. and continuously agitating the suspension to maintain uniformity until such time as the suspension is desired for use in the manufacture of a ready-to-eat food product;

(c) heating the suspension to a temperature in excess of 120° F. for a period of time sufficient to solubilize the gelatin; and then

(d) passing the gelatin-containing solution into a plurality of containers.

4,554,170

EXTRACTION OF PLANT MATERIAL BY USING CARBON DIOXIDE

Frank Panzner, and Brian R. Evans, both of Tenbury Wells, England, assignors to Hop Developments Limited, Worcestershire, England

Filed May 2, 1983, Ser. No. 490,676
Claims priority, application United Kingdom, May 6, 1982, 8213136; Jun. 22, 1982, 8217980
Int. Cl.[4] A23L *1/222;* A61K *35/78*
U.S. Cl. 426—651 9 Claims

1. A method of extracting hops in order to obtain at least fractions of its essential oil and resin components, said method comprising the following steps, namely,

(a) admixing carbon dioxide in either the liquid or the supercritical state thereof with hops in a pressure vessel at a temperature and pressure such as to maintain said carbon dioxide in the liquid or supercritical state for a period of time in order to effect said extraction;

(b) displacing said carbon dioxide with an inert gas which remains in the gas phase under the extraction conditions; and

(c) venting said inert gas from said pressure vessel.

4,554,171

PROCESS FOR COATING RICE SEED WITH CALCIUM PEROXIDE BY CHEMICAL REACTION ON THE SEED

Clarence C. Bowling, 1750 Wooten Rd., Beaumont, Tex. 77707

Filed May 23, 1983, Ser. No. 497,112
Int. Cl.[4] A01C *1/06*
U.S. Cl. 427—4 3 Claims

1. A process wherein a coating of calcium peroxide is formed on seed surfaces by chemical reaction of successive applications of hydrogen peroxide with calcium hydroxide.

4,554,172

METHOD OF REPAIRING ELECTRODE SURFACES

Charles H. Harrison, Cleveland, Tenn., assignor to Olin Corporation, Cheshire, Conn.

Filed Jul. 5, 1984, Ser. No. 628,087
Int. Cl.[4] B32B *35/00;* B29H *19/00*
U.S. Cl. 427—12 10 Claims

1. A method of repairing physically damaged electrode surfaces of an electrolytic cell electrode having a membrane separator in contact with the electrode surface which comprises coating the damaged area with a polyhaloolefin and curing said coating, said cured coating bonding a repaired damaged area to the surrounding electrode surface.

2. The method of claim 1 in which the polyhaloolefin is selected from the group consisting of polymers of olefins having 2 to 3 carbon atoms which are substituted by at least one fluorine or chlorine atom.

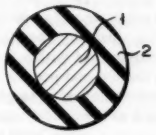
4. The method of claim 2 in which said curing is accomplished by the application of radiation.

4,554,173

METHOD FOR MANUFACTURING FLAME-RETARDANT INSULATED WIRE AND CABLE FOR NUCLEAR POWER STATIONS

Syunichi Fujimura, Chigasaki; Eisuke Oda, Yokohama; Miyuki Hagiwara, Maebashi, and Youske Morita, Takasaki, all of Japan, assignors to The Furukawa Electric Co., Ltd. and Japan Atomic Energy Research Institute, both of Tokyo, Japan

Filed Aug. 8, 1983, Ser. No. 521,115
Claims priority, application Japan, Aug. 13, 1982, 57-139680
Int. Cl.[4] B05D *5/12*
U.S. Cl. 427—120 18 Claims



1. A method for manufacturing a flame-retardant insulated wire and cable for nuclear power stations, comprising the steps of extruding on a conductor or cable core to a predetermined thickness a composition consisting essentially of 100 parts by weight of a base polymer selected from the group consisting of a thermoplastic resin or a rubber which can be crosslinked by an organic peroxide-based crosslinking agent, at least 10 parts by weight of a brominated acenaphthylene or a condensate thereof, and 0.5 to 10 parts by weight of an organic peroxide, and heating the resultant wire or cable for crosslinking in the absence of water, said heating being carried out by passing the wire or cable through a molten salt bath under a pressurized nitrogen gas at a temperature higher than the decomposition temperature of the organic peroxide.

4,554,174

PROCESS FOR PRODUCING RADIATION CURABLE ADHESIVE TAPE

Tomohisa Ohta; Akihiko Dobashi; Hisashige Kanbara, all of Shimodate, and Yasuyuki Seki, Hitachi, all of Japan, assignors to Hitachi Chemical Company, Tokyo, Japan

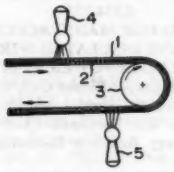
Filed Dec. 4, 1984, Ser. No. 678,046
Claims priority, application Japan, Dec. 9, 1983, 58-233373
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—44 6 Claims

1. In a process for producing a radiation curable adhesive tape by coating a pressure sensitive adhesive composition comprising a liquid oligomer having one or more radically crosslinkable unsaturated double bonds in its molecule and a thiol compound on a surface of substrate and exposing said composition to radiation, the improvement which comprises coating as an undercoating a quaternary ammonium salt on a surface of substrate before the coating of the pressure sensitive adhesive composition.

4,554,175
METHOD OF PRODUCING SUPPORT FOR PHOTOGRAPHIC PAPER

Toshiaki Shibue, and Koichi Nagayasu, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1984, Ser. No. 589,876
Claims priority, application Japan, Mar. 28, 1983, 58-53042; Mar. 29, 1983, 58-54948
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—44 17 Claims



1. A method of producing a support for a photographic paper, which comprises applying primary irradiation of electron beams to at least one coated layer formed on one side or both sides of a substrate and curable by irradiation of electron beams thereafter, bringing the surface of said at least one coated layer into contact with a form member having shapes on the surface thereof and peeling off said coated layer from the form member, followed by applying secondary irradiation of electron beams to the coated layer; said primary irradiation being carried out so that the surface of the coated layer may hold shapes substantially corresponding to said shapes on the surface of the form member at the stage where the coated layer has been peeled off from the form member.

4,554,176
DURABLE ELECTRODE FOR ELECTROLYSIS AND PROCESS FOR PRODUCTION THEREOF

Hiroshi Asano, Chiba; Takayuki Shimamune, Tokyo; Kazuhiro Hirao, and Ryuta Hirayama, both of Kanagawa, all of Japan, assignors to Permelec Electrode Ltd., Kanagawa, Japan

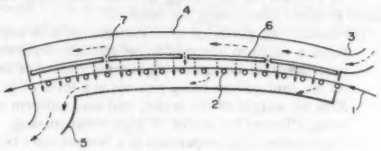
Division of Ser. No. 575,602, Jan. 31, 1984, Pat. No. 4,481,097. This application Apr. 23, 1984, Ser. No. 602,861
Claims priority, application Japan, Jan. 31, 1983, 58-12919
The portion of the term of this patent subsequent to Nov. 27, 2001, has been disclaimed.
Int. Cl.[4] C25B *11/10*
U.S. Cl. 427—125 10 Claims

1. A method for the production of an electrolytic electrode, comprising the steps of preparing a substrate of a conducting metal, depositing a solution containing salts of Ti and/or Sn, Ta and Pt on said substrate to provide a coated substrate, heating the coated substrate with the solution under an oxidizing atmosphere thereby forming an intermediate layer comprising metallic Pt dispersed in a conducting metal mixed oxide of at least one metal selected from the group consisting of Ti and Sn and an oxide of Ta on said substrate, and subsequently coating said intermediate layer with a layer of an electrode active substance.

4,554,177
DRYING METHOD

Hiroshi Chikamasa, and Shinji Noda, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 429,398, Sep. 30, 1982, abandoned. This application Jul. 11, 1984, Ser. No. 629,746
Claims priority, application Japan, Oct. 3, 1981, 56-158035
Int. Cl.[4] B05D *3/02, 3/04, 5/12*
U.S. Cl. 427—130 15 Claims

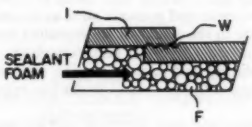


1. A method for drying a running web or belt-like support with an organic solvent-containing coating solution coated thereon for the preparation of a magnetic recording material, comprising the steps of; introducing the support into a drying room, drying said support by hot air introduced into the drying room parallel to the running direction of the support in such a manner that said hot air does not strike directly on the coated surface of the support, and continuously conveying the support in an arch-like or straight form through said drying room on rolls provided therein.

4,554,178
METHOD OF INTERNALLY COATING PIPELINE

Mitsuo Yamamoto; Namio Kinumoto; Toshinori Tsuji, all of Osaka, and Tutomu Hiraoka, Uji, all of Japan, assignors to Osaka Gas Company, Osaka, Japan

Continuation-in-part of Ser. No. 416,188, Sep. 9, 1982, abandoned, which is a division of Ser. No. 304,439, Sep. 21, 1981, abandoned. This application Aug. 27, 1984, Ser. No. 644,415
Int. Cl.[4] B05D *7/22*
U.S. Cl. 427—140 3 Claims



1. A method of internally coating the inner surface of a pipeline and filling leaking cracks from inside of the pipeline comprising the steps of:

disconnecting the pipeline at two different locations,

closing both ends of the pipeline,

discharging any gases remaining in the pipeline,

filling said closed end pipeline with a soluble emulsion type sealant in a foam state by use of inert gas or air,

applying a predetermined pressure to the foam-filled pipeline for a predetermined period of time thereby forcing some of said sealant foam into leaking cracks,

directing an inert gas or air flow into said foam-filled pipe to drain any excess amount of said sealant from said pipeline thereby forming a tubular form of said sealant adhering to said pipe along its inner wall surface and extending along its length, and

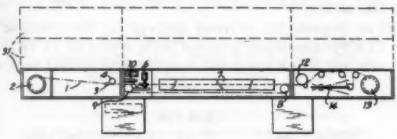
allowing said tubular form adhering to the inner surface of said pipeline to cure

wherein the sealant contains fine particles of inorganic oxide weakly adhering to one another into aggregations.

4,554,179
METHOD FOR THE COLOR CODING OF OPTICAL FIBERS

Harald Roderburg, Langenhagen, Fed. Rep. of Germany, assignor to Gesellschaft mit beschränkter Haftung Kabelmetal Electro, Hanover, Fed. Rep. of Germany

Filed Jun. 28, 1984, Ser. No. 625,867
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1983, 3323547; Mar. 1, 1984, 3407520
Int. Cl.[4] B05D *1/02*; G02B *5/14*
U.S. Cl. 427—163 8 Claims



1. A method for the color coding of at least one optical fiber which is arranged together with at least one other optical fiber in the core of a cable, comprising the steps of

first pulling off the optical fiber from a pay-off reel by a pull-off means and then pulling the optical fiber through a color chamber containing color for continuous coloring of the surface of the optical fiber,

thereupon, selectively spraying ring-shaped markings which are limited in axial direction onto the colored surface of the optical fiber by jets of another color which emerge under pressure from a nozzle swinging continuously around a pivot axis, the markings comprising said another color which is clearly distinct from the color in the color chamber,

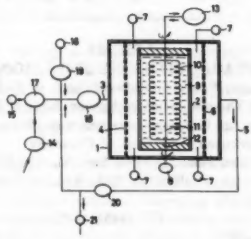
thereupon conducting the optical fiber through a drying path, and

then winding the optical fiber up on a take-up reel.

4,554,180
PROCESS FOR PRODUCING SILICON-CONTAINING DEPOSIT FILM

Masaaki Hirooka, Toride, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1984, Ser. No. 628,569
Claims priority, application Japan, Jul. 22, 1983, 58-1341622
Int. Cl.[4] C23C *11/00, 13/00*
U.S. Cl. 427—248.1 3 Claims



1. A process for producing silicon-containing deposit films which comprises introducing a cyclic silane represented by the general formula $(SiH_2)_n$, wherein n is 4, 5, or 6, in the gaseous state together with a carrier gas into a deposition chamber and applying heat to the introduced gases at ordinary pressure to decompose the cyclic silane and form a silicon-containing deposit film on a substrate placed in the deposition chamber.

4,554,181
INK JET RECORDING SHEET HAVING A BICOMPONENT CATIONIC RECORDING SURFACE

Michael J. Cousin, Ashville; Larry O. Hill, Frankfort, and Rhonda G. Justice, Waverly, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed May 7, 1984, Ser. No. 607,890
Int. Cl.[4] B41M *5/00*
U.S. Cl. 427—261 30 Claims

1. A recording sheet useful in ink jet recording comprising a substrate having a recording surface containing a cationic polymer and a water soluble polyvalent metal salt, said polymer providing said surface with cationic groups for ionically interacting with an anionic dye and insolubilizing it; wherein at least 3 mol % of the monomeric units making up said polymer are derived from cationic monomers and said salt is a salt of a metal from Group II, Group III, or the Transition Metals of the Periodic Table of Elements.

4,554,182
METHOD FOR CONDITIONING A SURFACE OF A DIELECTRIC SUBSTRATE FOR ELECTROLESS PLATING

James R. Bupp; Gary K. Lemon; Voya Markovich, all of Endwell; Carlos J. Sambucetti, Croton-on-Hudson; Stephen L. Tisdale, and Donna J. Trevitt, both of Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 540,962, Oct. 11, 1983, abandoned.
This application Jan. 31, 1985, Ser. No. 696,879
Int. Cl.[4] C23C *3/02*
U.S. Cl. 427—304 46 Claims

1. Method for conditioning at least one surface of a dielectric substrate for eliminating resist blistering from subsequently applied photoresist and for electrolessly plating of a conductive metal thereon comprising:

bringing said at least one surface into contact with a composition containing H_2SO_4 and a multifunctional cationic polymer containing at least two available cationic moieites and wherein said composition has a pH value of between about 0 and about 3, and then activating the surface by treating it with a colloidal solution containing palladium chloride, stannous chloride and HCl.

4,554,183
PROCESS FOR PRETREATING POLYAMIDE SUBSTRATES FOR ELECTROLESS METALLIZATION

Kirkor Sirinyan, Bergisch Gladbach; Gerhard D. Wolf, Dormagen; Rudolf Merten, and Ulrich von Gizycki, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 29, 1984, Ser. No. 665,799
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1983, 3339857
Int. Cl.[4] B05D *3/10*
U.S. Cl. 427—306 10 Claims

1. Process for pretreating substrate surfaces of polyamide mouldings for the electroless metallisation, characterised in that the substrates are treated, in any desired sequence, with

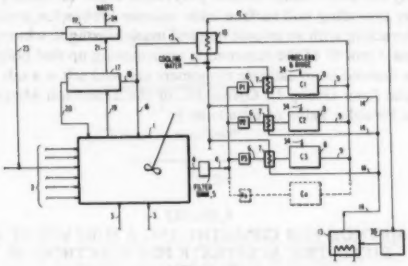
(a) a solution of a mixture of halides of elements of the 1st and 2nd main groups of the Periodic Table with salts of weak inorganic bases and strong inorganic acids in a non-etching organic swelling agent or solvent for polyamides and

(b) a metal-organic complex compound of elements of the 1st and/or 8th sub-group of the Periodic Table.

4,554,184
METHOD FOR PLATING FROM AN ELECTROLESS PLATING BATH

Michael J. Canestaro, Endicott; Ronald A. Kaschak, Vestal; Donald G. McBride, Binghamton, and Donald P. Seraphim, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 2, 1984, Ser. No. 626,961
Int. Cl.[4] C23C *3/02*
U.S. Cl. 427—345 **19 Claims**



1. A process for plating copper metal from an electroless copper plating bath on a substrate wherein the formation of nodules during plating is at least significantly reduced which comprises:

(A) providing a source of an electroless plating bath maintained at a non-plating temperature in a master mixing tank;

(B) transferring at least a portion of the plating bath to at least one plating cell wherein the amount of plating bath transferred to any one plating cell is less than the total of plating bath in said master mixing tank;

(C) changing the temperature of said bath from a non-plating temperature to a plating temperature, while maintaining substantially constant the concentration of components except for dissolved gases in said bath; and

(D) contacting a substrate to be plated with the bath at a plating temperature in the plating cell.

4,554,185
ANTI-FOULING COATING COMPOSITION, PROCESS FOR APPLYING SAME AND COATING THEREBY OBTAINED

Thomas Lane, Lutz, and Murray Rosen, Seminole, both of Fla., assignors to Marine Shield Corporation, St. Petersburg, Fla.

Filed May 15, 1984, Ser. No. 640,973
Int. Cl.[4] B05D *5/00*; C09D *5/14*
U.S. Cl. 427—385.5 **37 Claims**

1. An anti-fouling, film-forming composition comprising:

(a) a hydrophilic component selected from the group consisting of (1) castor oil; (2) partially dehydrated castor oil having a hydroxyl equivalent weight of 600–800, (3) a partially hydrolyzed polyvinylester having a hydroxyl equivalent weight of 300–600; (4) a polymer of a hydroxyalkyl acrylate or of a hydroxyalkyl alpha-alkyl-acrylate having no more than 4 carbon atoms in said hydroxylalkyl or in said alpha-alkyl group and said polymer having a molecular weight in the range of 80,000–120,000 and a hydroxyl equivalent weight in the range of 100–900; (5) a partially hydrolyzed copolymer of vinyl chloride and vinyl ester having a hydroxyl equivalent weight of 300–600; and (6) a polymer of a monovinyl or monoalphamethylvinyl or monoalphaethylvinyl ether of an alkylene glycol having 2–6 carbon atoms, said polymer having a hydroxyl equivalent weight of 300–600;

(b) a hydrophobic component having no more than 35 carbon atoms therein and having 1–3 urethane groups per molecule;

(c) a solvent component having one or more compounds selected from the group consisting of a hydroxyl-containing compound having the formula $R''(OH)_{n'}$ wherein R'' represents an aliphatic, arylaliphatic or cycloaliphatic hydrocarbon group having 2–10 carbon atoms and n' is an integer having a value of 1–3, R'' may also have 1 carbon atom when n' is 1, a monoether or monoester of an alkylene glycol having no more than 10 carbon atoms, an aromatic hydrocarbon having a kauri butanol value of 73–105, and a ketone having no more than 10 carbon atoms; and

(d) an organic tin polymer derived by the reaction of a COOH-containing polymer with R_3SnOH or $(R_3Sn)_2O$ wherein R is a lower alkyl, cycloalkyl or aryl radical

4,554,186
ORGANOALUMINOSILOXANE COATING COMPOSITIONS AND COATED SUBSTRATE

Arlene G. Williams, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 625,412, Jun. 28, 1984, Pat. No. 4,528,038, This application Apr. 4, 1985, Ser. No. 719,831
Int. Cl.[4] B05D *3/02*; B32B *9/00*; C09K *3/00*
U.S. Cl. 427—387 **3 Claims**

1. A method for applying an aluminosilicate coating having a predictable Al/Si ratio onto a substrate thermally insensitive to temperatures up to 1500° C. which comprises

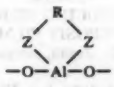
(1) contacting the substrate with an organic solvent solution of an organoaluminosiloxane and thereafter effecting the separation of organic solvent from the treated substrate,

(2) heating the treated substrate to a temperature of 450° to 700° C. until an aluminosilicate coating is obtained,

where the organic solvent solution of an organoaluminosiloxane is a composition comprising an organoaluminosiloxane coating compositions comprising by weight

(A) 100 parts of an inert organic solvent, and

(B) 10 to 30 parts of an organoalumoinosiloxane oligomer having an Al/Si ratio having a value of 5 to 1 and consisting essentially of



units chemically combined with $(R^1)_aSiO_{(4-a)/2}$ units where R is a polyvalent organic radical, R^1 is selected from a $C_{(1-13)}$ monovalent hydrocarbon radical and substituted $C_{(1-13)}$ monovalent hydrocarbon radical, Z is selected from —O—, —S— and —N=, and a has a value of 2.5 to 3.

4,554,187
STABLE SILICONE EMULSIONS

Wolfgang Grape; Franz Saykowski, both of Cologne; Ottfried Schlak, and Thomas Würminghausen, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 21, 1984, Ser. No. 622,936
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1983, 3323909
Int. Cl.[4] B05D *3/02*
U.S. Cl. 427—387 **10 Claims**

1. A silicone emulsion which can be converted into an elastomeric product under ambient conditions by eliminating and evaporating water and alcohol or carboxylic acid, comprising by weight approximately

(A) 100 parts of a hydroxyl-terminated polydiorganosiloxane having a molecular weight of at least about 50,000,

(B) 1–400 parts of a low molecular weight, reactive acyloxy- or alkoxyfunctional silicone resin,

(C) 0.1 to 20 parts of a catalytic compound,
(D) 0 to 200 parts of a thixotropic filler and
(E) 0 to 200 parts by weight of a non-thixotropic filler, the silicone emulsion having a solid content of about 20 to 85% by weight.

4,554,188

CHAIN-EXTENDABLE CROSSLINKABLE URETHANE MODIFIED POLYHYDROXY OLIGOMERS AND COATING COMPOSITION COMPRISING SAME

Joseph W. Holubka, Livonia, and Ray A. Dickie, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 334,798, Dec. 28, 1981, abandoned. This application Jan. 5, 1983, Ser. No. 455,699
Int. Cl.⁴ B05D *3/02*; C08L *75/08*
U.S. Cl. 427—393.5 **19 Claims**

1. A solvent-based resin composition comprising:
A. chain-extendable crosslinkable urethane modified polyhydroxy oligomer containing no ester linkages and bearing three or more hydroxyl groups and a single blocked isocyanate group, comprising the reaction product of a polyol with a half-blocked diisocyanate, wherein said polyol comprises the reaction product of a diepoxide with a diol and bears four or more hydroxyl groups, and said half-blocked diisocyanate comprises the reaction product of an organic diisocyanate with monofunctional blocking agent;
B. crosslinking agent reactive with hydroxy functionality and substantially unreactive with isocyanate functionality; and
C. organic solvent.

4,554,189

ARTICLES FOR COOLING BEVERAGES

Randall S. Marshall, 8149 E. Branch Dr., Washington, D.C. 20012

Filed Dec. 20, 1983, Ser. No. 563,598
Int. Cl.⁴ A63H *3/00*; F25D *3/08*
U.S. Cl. 428—11 **4 Claims**

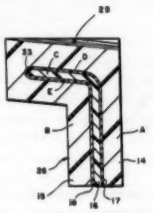
1. An article for cooling beverages and the like, the article comprising:
a container having a wall of plastic material completely enclosing a space, the wall defining a hollow main body portion and a plurality of hollow projecting portions communicating with the main body portions which hollow projecting portions increase the surface area of the container;
a phase-change medium confined within the hollow main body portion and plurality of hollow projecting portions, the phase-change material changing phase from a solid state to a liquid state at approximately the point at which ice melts to water and the presence of the phase-change material in the hollow pojecting portions promoting rapid cooling of the beverage;
a plurality of metallic elements projecting inwardly from those portions of the wall defining the hollow projecting portions of the container to further increase the heat transfer rate from the wall and projections to the bulk of the phase-change medium, and
weight means within the container to compensate for positive buoyancy thereof, whereby the container does not float at the top of the beverage being cooled thereby.

4,554,190

PLASTIC CONTAINERS WITH FOLDED-OVER INTERNAL LAYERS AND METHODS FOR MAKING SAME

Robert J. McHenry, St. Charles, Ill.; Henry Pfutzenreuter, III, Alta Loma, Calif.; Thomas T. Tung, Hoffman Estates, and John Vella, Jr., Aurora, both of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Apr. 13, 1983, Ser. No. 484,548
Int. Cl.⁴ B65D *23/00*; B29D *5/04*
U.S. Cl. 428—35 **58 Claims**



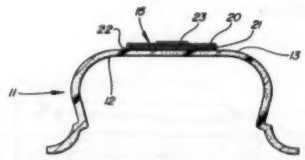
53. An injection-molded, multi-layer plastic article having a multi-layer integral wall which has an internal layer, a portion of which is folded over within the wall.

4,554,191

ETHYLENE-CONTAINING POLYMER FOAM/ADHESIVE SYSTEM

Ralf Korpman, Bridgewater, N.J., assignor to Personal Products Company, Milltown, N.J.

Continuation-in-part of Ser. No. 637,450, Aug. 3, 1984, abandoned. This application Feb. 13, 1985, Ser. No. 701,061
Int. Cl.⁴ B32B *1/00*, *3/14*
U.S. Cl. 428—35 **18 Claims**



2. A liquid-impermeable ethylene-containing polymer foam backing for an absorbent product adapted to be removably attached to a nether garment, said backing having top and bottom surfaces, there being adhesive attachment means positioned on the bottom surface of said backing, for temporarily, but securely, adhering said backing to the crotch portion of a nether garment, said attachment means comprising (a) a double-faced, pressure-sensitive adhesive tape, said tape having a first face permanently adhered to said backing, and an opposite second face adapted to be temporarily attached to a nether garment, said first face of said tape having an adhesion to steel exceeding 120 oz/inch width, with said second face of said tape having an adhesion to steel exceeding 75 oz/inch width, said tape being reinforced with an inner substrate having a non-recoverable extensibility of less than 100%, said backing being thermoformed in the form of a substantially flexible shell having a depth of at least about ¼ inch, said shell having an inner inside surface and an outside bottom surface, said shell

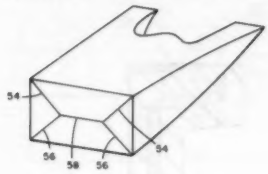
being adapted to contain within it an absorbent structure, said adhesive attachment means being positioned on said outside bottom surface of said shell.

4,554,192

THERMOPLASTIC BAG AND THERMOPLASTIC BAG PACK

Gordon L. Benoit, Macedon, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 2, 1984, Ser. No. 606,120
Int. Cl.[4] B65D *1/34, 6/04*
U.S. Cl. 428—35 **21 Claims**



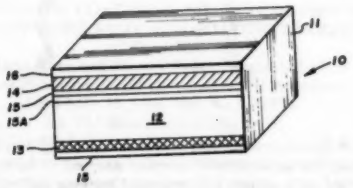
1. A bag structure of a thermoplastic film material comprising front and rear bag walls connected by gusseted side walls and having an open mouth top portion, said open mouth portion being characterized by having handles located at opposite end regions thereof, said handles each being of two films as a result of being integral extensions of said front, rear and gusseted side walls; said bag having a bottom wall planarly extensible so as to form an at least generally flat rectangle, said bottom being of integral extensions of said front, rear and side walls, said bottom having all two-film seals, with no substantial excess film outside of the bulk volumetric capacity of the bottom region of said bag.

4,554,193

SUBSTRATE WITH DIFFERENTIAL ADHESION

Nancy D. Erickson, North Oaks, Minn., assignor to Ende Company, North Oaks, Minn.

Filed May 21, 1984, Ser. No. 612,381
Int. Cl.[4] A61F *13/02*
U.S. Cl. 428—40 **3 Claims**



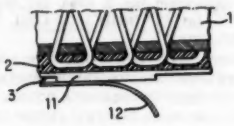
1. In a means for adhesively adjustably securing an article to a surface and including an adherent intermediary body with first and second coherent adhesive layers arranged on first and second opposed surfaces thereof, the improvement comprising:
(a) said adherent intermediary body comprising a core member fabricated of a polyolefin synthetic resinous layer;
(b) said first adhesive layer being a pressure sensitive adhesive material and being applied directly to said first surface and being characterized in that the adherent properties thereof produce a peel strength having a first value, and wherein;
(c) said second adhesive layer being a pressure sensitive adhesive applied to the polyester outwardly disposed surface of a co-extruded polyolefin/polyester composite film, the inwardly disposed polyolefin surface of said co-extruded composite film being thermally bonded directly to the surface of said polyolefin core member.

4,554,194

SELF-ADHESIVE FLOOR COVERING

Heinz Haas, Neumünster, and Klaus-Dieter Struve, Aukrug, both of Fed. Rep. of Germany, assignors to Teppichwerk Neumünster GmbH, Neumünster, Fed. Rep. of Germany

Filed Sep. 26, 1983, Ser. No. 536,103
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, 3235382; Aug. 4, 1983, 3328165
Int. Cl.[4] A61F *13/02*
U.S. Cl. 428—40 **2 Claims**



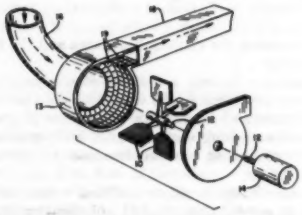
1. A deformable covering, comprising
(a) a first layer having a first side arranged to face toward and a second side arranged to face away from a floor, a wall, a ceiling, a roof or another support to which the covering is to be applied;
(b) an adhesive layer overlying at least in part the first side of said first layer and constituting a hotmelt which adheres to the support at room temperature in response to the application of pressure thereto by way of said first layer but is repeatedly separable from the support; and
(c) a protective layer having a first side in contact with but being peelable off said adhesive layer and a second side designed to inhibit sliding movements between said protective layer and said first layer when the covering is rolled up so that the second side of the protective layer contacts the second side of the first layer.

4,554,195

CERAMIC COATED ABRASION RESISTANT MEMBER AND PROCESS FOR MAKING

Thomas J. Ormiston, and Dean A. Rulis, both of Hillsboro, Oreg., assignors to Wilbanks International, Inc., Hillsboro, Oreg.

Division of Ser. No. 387,039, Jun. 10, 1982, abandoned. This application Apr. 6, 1984, Ser. No. 597,498
Int. Cl.[4] B32B *3/14*; F03B *3/12*
U.S. Cl. 428—49 **26 Claims**



1. An abrasion resistant member, comprising:
a substrate base member;
a plurality of thin ceramic plates of polycrystalline ceramic material of greater hardness and less thickness than said base member, each having a thickness many times less than its length;
bonding means for bonding said ceramic plates to a surface of said base member so that said plates are positioned in abutting relationship to form a substantially continuous ceramic coating on said surface;
said bonding means including bonds of adhesive bonding

material between said ceramic plates and said base member; and

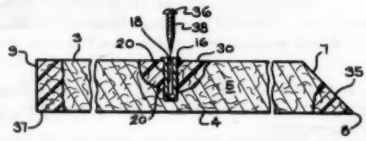
said bonding material including a thermosetting organic plastic adhesive bonded to a layer of silane coupling agent on said base member and said ceramic plates which forms chemical bonds with the organic plastic adhesive, said base member and said ceramic plates.

4,554,196

HARDENED PORTION OF A FIBROUS PRODUCT AND A METHOD FOR PRODUCING THE SAME

Brian L. Meeker, 738 Kumler, Maumee, Ohio 43537

Filed Oct. 24, 1983, Ser. No. 544,477
Int. Cl.⁴ B32B *31/00*; F16B *37/12*
U.S. Cl. 428—67 **11 Claims**



1. A method for hardening a portion of a fibrous product comprising the steps of:

creating an aperture in said portion of said fibrous product, said aperture extending into the interior of said fibrous product, applying a heated thermoplastic resinous material to said portion of said fibrous product after the formation of said aperture, said thermoplastic resinous material having a viscosity that allows said resinous material to permeate said portion of said fibrous product, said resinous material permeating partially through the thickness of said fibrous product whereby said heated resinous material permeates said portion of said fibrous product that is to be hardened, positioning an insert in said aperture after said application of said heated resinous material, cooling said heated resinous material whereby said resinous material substantially acts to bond said insert to said fibrous product when said resinous material cools.

11. A fibrous product comprising:

a panel of fibrous material having a first surface and a second surface, said first and second surfaces being in substantially opposed relationship, said panel having an edge that extends around the outer periphery of said panel between said first and second surfaces, a hardened portion located on a portion of said panel, said hardened portion being permeated with a resinous thermoplastic material, an aperture positioned in said hardened portion of said panel, said aperture extending from said first surface into said fibrous material in a direction towards said second surface and a plastic insert positioned in said aperture in said panel, said insert defining an opening, said opening being disposed for removably receiving a screw whereby said screw can be secured to said insert, said insert being secured to said aperture in said panel by said resinous material.

4,554,197

FIBER REINFORCED GLASS/GLASS-CERAMIC MIRROR BLANKS

Kenneth Chyung; Peter C. Schultz, and Mark P. Taylor, all of Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jun. 18, 1984, Ser. No. 621,932
Int. Cl.⁴ B32B *5/12*
U.S. Cl. 428—113 **29 Claims**

1. A mirror blank comprising a laminate consisting of a low expansion graphite or SiC fiber/glass-ceramic composite substrate and a mirror surface facing of a glass or glass-ceramic bonded thereto having an expansion closely matching that of said substrate.

4,554,198

WATERPROOF AND AIR-TIGHT, MOISTURE-CONDUCTING TEXTILE MATERIAL

Hubert von Blücher, Freytagstrasse 45; Hasso von Blücher, Sohnstrasse 58, both of D-4000 Düsseldorf, and Ernest de Ruiter, Hohenstrasse 57a, D-5000 Leverkusen all of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 454,389, Dec. 29, 1982, abandoned. This application Mar. 28, 1985, Ser. No. 716,900
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1982, 3200942
Int. Cl.⁴ A41D *13/00*; A62B *17/00*; B05D *5/00*; B32B *5/24*
U.S. Cl. 428—143 **6 Claims**

1. A textile material produced by coating a textile fabric with a dispersion in a solvent of a pre-coagulated polyurethane, removing the solvent to complete coagulation of the polyurethane, and drying to form a coating having a large number of micropores, the textile material having a water vapor permeability of 5,000 to 20,000 g/m².24 h.

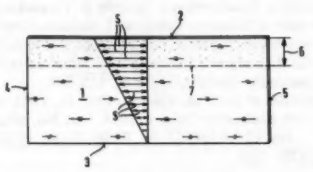
5. A textile material according to claim 1, in the form of an article of protective clothing.

4,554,199

INNER LAMINA, AND PROCESS FOR MANUFACTURE, FOR VEHICLE WINDSHIELD

Paul Roentgen, Roetgen/Rott; Helmut Krumm; Gunter Lenzen, both of Aachen, and Heinz Schilde, Wuerselen, all of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, Aubervilliers Cedex, France

Filed Mar. 5, 1982, Ser. No. 355,250
Claims priority, application France, Mar. 6, 1981, 81 04499
Int. Cl.⁴ B32B *3/02, 27/30*
U.S. Cl. 428—194 **9 Claims**



1. A sheet of plastic material in extending rectilinear disposition and rectangular in outline for use in fabricating inner lamina of a laminated windshield, said sheet in the rectilinear direction being subjected to internal tensile stress which varies in intensity crosswise of said sheet, said internal tensile stress being frozen in said sheet whereby when the temperature of said sheet is raised to a temperature above a transformation temperature and there is a relaxation in said internal tensile stress said sheet deforms from said extending rectilinear disposition into a simple curved sheet.

7. A process of forming a sheet for use in fabricating inner lamina of a laminated windshield comprising elevating the temperature of the sheet in extending rectilinear disposition and rectangular outline crosswise in a manner that the temperature profile increases from one edge of the sheet toward the other edge, substantially simultaneously subjecting the sheet in extending rectilinear disposition to drawing whereby said sheet undergoes elongation up to about 40%, and, while the sheet is subject to induced tensile stress in an area of elastic deformation, rapidly cooling the sheet to a temperature below a transformation temperature to maintain the sheet in said extending rectilinear disposition and freeze the induced tensile stress in place.

4,554,200

POLYESTER FILM PRIMED WITH ORGANIC ACID SALTS

R. Scott Caines, Greer, S.C., assignor to American Hoechst Corporation, Somerville, N.J.

Continuation of Ser. No. 512,254, Jul. 11, 1983, Pat. No. 4,486,483. This application Sep. 24, 1984, Ser. No. 653,428
The portion of the term of this patent subsequent to Dec. 4, 2001, has been disclaimed.
Int. Cl.[4] B32B *3/14, 27/06, 27/36*
U.S. Cl. 428—207 3 Claims

1. An oriented self-supporting polyester film having a thin continuous primer coating on one or both sides thereof, said coating consisting essentially of a salt selected from the group consisting of:

(a) a water soluble alkali metal salt of an unsaturated fatty acid having from 10 to 18 carbon atoms and mixtures of such salts; or

(b) a water soluble alkali metal salt of an alkyl sulfate having from 8 to 18 carbon atoms, and mixtures of such salts,

said primer coating being present at a weight effective to improve the adhesion of printing inks to said film and wherein said film is prepared by melt extruding a substantially amorphous polyester film and thereafter orienting said film by stretching in one or two directions and heat setting said film, said primer coating being applied to said film as an aqueous solution prior to stretching in one direction, or subsequent to stretching in one direction but prior to stretching in a mutually perpendicular direction, or subsequent to stretching but prior to winding the oriented film, said film being subjected to a corona discharge treatment prior to the application of said primer coating, and wherein said film has a printing ink composition applied directly to said primer coating.

4,554,201

MULTILAYER COATINGS OF METAL-CUTTING TOOLS

Anatoly A. Andreev; Igor V. Gavrilko, both of Kharkov; Alexei G. Gavrilov, Moskovskaya; Anatoly S. Vereschaka; Viktor P. Zhed, both of Moscow; Valentin G. Padalka, Kharkov; Andrei K. Sinelschikov, Moscow, and Vladimir T. Tolok, Kharkov, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Instrumentalny Institut, Moscow, U.S.S.R.

Continuation of Ser. No. 438,867, Oct. 18, 1982, abandoned.
This application May 1, 1984, Ser. No. 605,862
Int. Cl.[4] B23P *15/28;* B32B *15/04, 33/00*
U.S. Cl. 428—215 2 Claims

1. A multilayer coating of metal-cutting tools composed by alternating layers of two components, one being a nitride or carbide of a metal of group IV, and the other being a nitride, carbide, boride or silicide of a metal of group VI.

4,554,202

PACKAGING CLOTH

Ryosuke Kamei, Yokohama; Keiitsu Kobayashi, Ayase; Akira Nakamura, Chigasaki; Toshikazu Shimamura, Ibaraki; Masamitsu Tsuksda, Ibaraki, and Hisashi Ono, Ibaraki, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1984, Ser. No. 628,379
Claims priority, application Japan, Jul. 8, 1983, 58-123199; Jul. 15, 1983, 58-127990; Aug. 12, 1983, 58-146610
Int. Cl.[4] D03D *3/00*
U.S. Cl. 428—225 9 Claims

1. A packaging cloth comprising a woven or knitted fabric obtained by using, as at least a portion of either or both of warp and weft for a woven fabric or at least a portion of either or both of wales and courses for a knitted fabric, thread or tape obtained by melt extrusion of linear low-density ethylene polymer having a density of less than 0.945 g/cm^3 and having a branched short chain, followed by stretching at a temperature of less than 120° C.

4,554,203

METHOD FOR MANUFACTURING LARGE SURFACE SILICON CRYSTAL BODIES FOR SOLAR CELLS, AND BODIES SO PRODUCED

Josef Grabmaier, Starnberg, and Richard Falckenberg, Wald, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 8, 1985, Ser. No. 709,713
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1984, 3413369
Int. Cl.[4] H01L *21/84, 27/14*
U.S. Cl. 428—229 7 Claims

1. A method for the manufacture of large surface, quasi-monocrystalline silicon bodies of the type used in solar cells which comprises:

reacting at least the surface of a carbon fiber fabric with a first metallic silicon bath under conditions sufficient to form silicon carbide, and

immediately thereafter coating the thus reacted fabric with silicon from a second molten silicon bath.

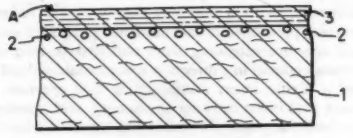
6. A large surface, quasi-monocrystalline silicon body having a core composed of a carbon fiber fabric whose surface includes an integral skin of silicon carbide, said skin being covered by an outer coating of metallic silicon.

4,554,204

FIBER REINFORCED RESIN MOLDED ARTICLES FOR ELECTROMAGNETIC WAVES AND METHOD FOR PRODUCTION THEREOF

Nobuhiro Ono, and Eiji Miwa, both of Ueno, Japan, assignors to INAX Corporation, Tokoname, Japan

Filed Nov. 3, 1983, Ser. No. 548,236
Claims priority, application Japan, Nov. 6, 1982, 57-194899
Int. Cl.[4] B32B *7/00;* B29D *3/02*
U.S. Cl. 428—246 22 Claims



1. A fiber reinforced resin molded article for electromagnetic waves having the properties of uniformly reflecting and shielding electromagnetic waves in the range of VHF to EHF, which comprises a compression-molded crosslink-cured laminated structure, having a plane or curved reflective surface, consisting essentially of a surface layer, an intermediate layer adjacent to said surface layer and a substrate layer; said surface layer being an electroconductive nonwoven fabric-cured resin composite layer having an effective layer thickness of at least about 0.005 mm; said intermediate layer being a woven fabric-cured resin composite layer having an effective layer thickness of at least about 0.005 mm, said woven fabric having a mesh size of not larger than about 5 mesh; and said substrate layer being a fiber material reinforced resin layer.

4,554,205

LAMINATED SAILCLOTH

Peter Mahr, 32 Fleming La., Fairfield, Conn. 06430

Filed Mar. 7, 1985, Ser. No. 709,222
Int. Cl.[4] B32B *7/00*
U.S. Cl. 428—253 7 Claims

1. An improved sailcloth comprising first and second fabric plies laminated together with an adhesive, said first ply being a tightly woven, resinated cloth having a combined relative cover factor in the warp and weft directions of at least 1800, said second fabric ply having a relative cover factor of less than 1000 in the warp direction and less than 700 in the weft direction.

4,554,206

POLYESTER HOT-MELT ADHESIVES

Samuel D. Hilbert, Jonesborough, and Richard L. McConnell, Kingsport, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 29, 1985, Ser. No. 717,933
Int. Cl.[4] C08G *63/68*
U.S. Cl. 428—261 8 Claims

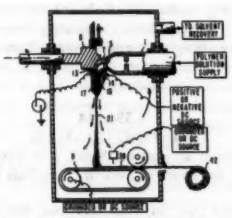
1. A linear, thermoplastic, crystalline copolyester adhesive, said copolyester adhesive having a melting point of about 60°–180° C., an I.V. of about 0.4–1.2, and a heat of fusion of less than 12 calories per gram, and said copolyester adhesive having repeat units from (a) an alicyclic or aliphatic glycol having 2 to 12 carbon atoms and at least one halogen substituent, (b) an aliphatic, alicyclic or aromatic dibasic acid having 4 to 12 carbon atoms and at least one halogen substituent, or (c) a combination of (a) and (b), wherein (a), (b) or (c) accounts for about 2–50 mole percent based on 100 mole percent glycol and 100 mole percent dibasic acid, said copolyester containing sufficient mole percent of at least one other aliphatic or alicyclic glycol having 2 to 12 carbon atoms to bring the total to 100 mole percent glycol and sufficient mole percent of at least one other aliphatic, alicyclic or aromatic acid having 4 to 12 carbon atoms to bring the total to 100 mole percent dibasic acid.

4,554,207

STRETCHED-AND-BONDED POLYETHYLENE PLEXIFILAMENTARY NONWOVEN SHEET

Chi C. Lee, Richmond, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 10, 1984, Ser. No. 679,799
Int. Cl.[4] B32B *17/02*
U.S. Cl. 428—288 9 Claims



1. In a wide, lightweight, bonded, non-woven sheet of polyethylene plexifilamentary film-fibril strands having a unit weight of no greater than 60 g/m2, the improvement comprising in combination, an opacity of at least 75% and a pattern of long wavelength X-ray scattering which is characterized by a Guinier plot of the logarithm of the intensity of the scattered X-rays versus the square of the scattering angle, said plot exhibiting a ratio of the slope at 0.005 square radians to the slope at 0.010 square radians that is no greater than 0.85.

4,554,208

METAL BEARING SURFACE HAVING AN ADHERENT SCORE-RESISTANT COATING

Bernard A. MacIver, Lathrup Village; James C. Erskine, Jr., Birmingham, and John C. Bierlein, Washington, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 565,395, Dec. 27, 1983, Pat. No. 4,540,636.
This application Nov. 23, 1984, Ser. No. 674,239
Int. Cl.[4] B32B *9/00;* B05D *3/06*
U.S. Cl. 428—332 1 Claim

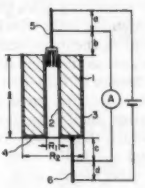
1. An article of manufacture comprising a metal bearing surface, a sliding contact layer on the bearing surface that is less than about 1.0 micrometer thick and consists essentially of a sulfur-free organic resin that has been carbonized by ion implantation, which carbonized layer includes graphite-like and diamond-like crystalline microstructures, and a chemical bond between the carbonized layer and the metal bearing surface, that is attributable to chemical reactions induced by implanted ions targeted to provide maximum layer damage between the carbonized layer and the metal bearing surface, effective to provide an adherent, hard and score-resistant sliding contact coating on the metal bearing surface.

4,554,209

CORROSION INHIBITING COATING COMPRISING LAYER OF ORGANIC CORROSION INHIBITOR AND LAYER OF FLUORIDIZED ACRYLATE

Osamu Kanoh, and Atsuo Senda, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Jun. 7, 1984, Ser. No. 618,123
Claims priority, application Japan, Jun. 8, 1983, 58-103271
Int. Cl.[4] B32B *27/00*
U.S. Cl. 428—334 7 Claims



1. A corrision inhibiting coating for a metal surface, said coating comprising: a layer of an organic corrosion inhibitor on said surface and a layer of a material comprised of fluoridized acrylate on said organic layer.

4,554,210

LAMINATED ANTI-STATIC SKIN-PACKAGING MATERIAL

Stuart G. Long, South Laguna, and Michael J. Maciocia, Ontario, both of Calif., assignors to General Dynamics Pomona Division, Pomona, Calif.

Filed Apr. 9, 1984, Ser. No. 597,975
Int. Cl.[4] B32B *15/08, 27/08*
U.S. Cl. 428—349 2 Claims

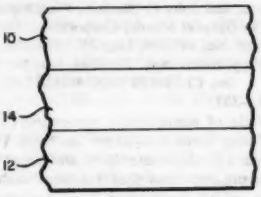
1. A laminated, anti-static, heat sealable packaging material for packaging and preventing contamination of an electrostatically sensitive item packed in said packaging material, comprising:

a first outer layer of heat-sealable, semi-conductive polyethylene having a surface resistivity at least 1×10^{16} ohms per square;

a second outer layer of heat-sealable, semi-conductive polyethylene having a surface resistivity at least 1×10^{16} ohms per square; and

a middle layer of heat-sealable polyethylene impregnated with a sloughable, electrically-conductive material providing said middle layer with a volume resistivity no more

than 1×10^3 ohms per centimeter, said middle layer bondedly sandwiched between said first and second layers to prevent said electrically-conductive material sloughing



from said middle layer to contaminate an electrostatically sensitive item when said item is heat-sealably packaged in said packaging material.

4,554,211

SPHERICAL MICRO-POROUS SILICA GEL AND A PRODUCTION PROCESS THEREOF

Junji Arika, Tokuyama; Eiji Shiota, Shin-nanyo, and Kazuaki Yamamoto, Tokuyama, all of Japan, assignors to Toyo Soda Manufacturing Co. Ltd., Yamaguchi, Japan

Filed Aug. 2, 1983, Ser. No. 519,496

Claims priority, application Japan, Aug. 4, 1982, 57-135210

Int. Cl.[4] C01B *33/16*

U.S. Cl. 428—402 **7 Claims**

1. A spherical micro-porous silica gel, which is characterized by having a mean diameter of 3–20 μm, a bulk density of 0.28–0.41 g/cm^3, a pore size of 18,000–100,000, and a specific surface area of 1,000–1,400 m^2/g.

3. In a process for producing silica gels through gelation of aqueous solution containing SiO_2 which is dispersed in an oil phase as aqueous droplets, the improvement for the production of a spherical micro-porous silica gel having a mean diameter of 3–20 μm, a bulk density of 0.28–0.41 g/cm^3, a pore size of 18,000–100,000, and a specific surface area of 1,000–1,400 m^2/g, which comprises employing (a) an aqueous solution containing SiO_2 in which the primary particle diameter is not larger than 6 nm and the molar ratio of SiO_2/Na_2O is not larger than 5.5, (b) either stearic acid or a mixture of stearic acid and a non-ionic surface active agent of which HLB ranges from 3.5 to 6.0 as an emulsifier and (c) an organic acid as a gelling agent.

4,554,212

BINDERS FOR CATHODICALLY DEPOSITABLE COATING COMPOSITIONS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Horst Diefenbach, Nottuln; Arnold Dobbelstein, Münster, and Hans-Dieter Hille, Berg.-Gladbach, all of Fed. Rep. of Germany, assignors to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

Continuation of ser. No. 385,933, Jun. 7, 1982,. This application Aug. 1, 1984, Ser. No. 636,082

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1981, 3123536

Int. Cl.[4] B23B *27/38*

U.S. Cl. 428—413 **28 Claims**

1. A method of electrocoating a substrate comprising cathodically depositing on said substrate a coating composition consisting essentially of a cationic synthetic resin binder which is the emulsion polymerization product of:

(A) 5 to 95% by weight of ethylenically unsaturated polymerizable monomers with

(B) 95 to 5% by weight of a cationic synthetic resin,

the total amount of components (A) and (B) being 100%,

wherein component (A) is an ester selected from the group consisting of an alkyl ester of acrylic acid, an alkyl ester of methacrylic acid or a mixture thereof, said esters having an alkyl group containing 1 to 4 carbon atoms or component (A) is a mixture of

(a_1) 10 to 99% by weight of an alkyl ester of acrylic acid, an alkyl ester of methacrylic acid or a mixture thereof said esters having an alkyl group containing 1 to 4 carbon atoms; and

(a_2) 1 to 30% by weight of ethylenically unsaturated compounds having functional groups selected from the group consisting of derivates of esters of methacrylic acid containing hydroxyl groups, esters of methacrylic acid having epoxide groups, esters of methacrylic acid having tertiary amino groups, esters of acrylic acid containing hydroxyl groups, esters of acrylic acid having epoxide groups, esters of acrylic acid having tertiary amino groups and mixtures thereof;

the total amount of the components (a_1) and (a_2) being 100%,

and component (B) is a resin selected from the group consisting of epoxide resins having ammonium groups, epoxide resins having sulfonium groups, epoxide resins having phosphonium groups, acrylate resins having ammonium groups, acrylate resins having sulfonium groups, acrylate resins having phosphonium groups, polyester resins having ammonium groups, polyester resins having sulfonium groups, polyester resins having phosphonium groups, polyurethane resins having ammonium groups, polyurethane resins having sulfonium groups, polyurethane resins having phosphonium groups, polyether resins having ammonium groups, polyether resins having sulfonium groups, polyether resins having phosphonium groups, polyamide resins having ammonium groups, polyamide resins having sulfonium groups, polyamide resins having phosphonium groups, polyurea resins having ammonium groups, polyurea resins having sulfonium groups, polyurea resins having phosphonium groups and mixtures thereof;

and stoving said cathodically deposited binder.

4,554,213

HIGH PUNCHABILITY HEAT RESISTANT COATING FOR SHEET METAL

Paolo Marini, Rome, and Marcello Candiotti, Terni, both of Italy, assignors to Centro Sperimentale Metallurgico SpA and Terni - Societa per l'Industria e l'Elettricita SpA, both of Rome, Italy

Filed Nov. 29, 1984, Ser. No. 676,300

Claims priority, application Italy, Jan. 4, 1984, 47511 A/84

Int. Cl.[4] B32B *15/08, 27/42;* **C08K** *5/05;* **C08L** *63/00*

U.S. Cl. 428—418 **4 Claims**

1. High punchability sheet steel, coated with a complex mixture consisting essentially of phosphates and resins compatible with acid phosphate ions, containing between 60 and 95% by weight of the phosphates and between 5 and 40% by weight of the resins.

4,554,214

CASTING COATING

Toshio Ichinomiya; Ryosaburo Seiki, and Tatsuo Imai, all of Kobe, Japan, assignors to Seikoh Chemicals Co., Ltd., Kobe, Japan

Filed Dec. 30, 1982, Ser. No. 454,555

Claims priority, application Japan, Jan. 8, 1982, 57-1931; Jan. 8, 1982, 57-1932; Jan. 18, 1982, 57-6517

Int. Cl.[4] B32B *27/40, 27/32*

U.S. Cl. 428—423.1 **19 Claims**

1. A transparent casting coating prepared by spreading on a releasable substrate a resin composition consisting essentially of an organic solvent, 95 to 15 parts by weight of a non-yellowing polyurethane-polyurea resin, based on 100 parts by weight of non-volatile matter in the composition, 5 to 60 parts by weight, based on 100 parts of non-volatile matter in the composition of an acrylic copolymer containing a quaternary ammo-

nium salt and having cross-linkable groups in its molecular structure, the said copolymer being compatible with said polyurea resin, and a cross linking agent selected from the group consisting of a blocked isocyanate and an aminoplast used in an amount of 1 to 25 parts by weight, based on the weight of non-volatile matter in the composition and then heating the solution to cross-link the coating on the releasable substrate.

4,554,215

COATING OF CELLULOSIC BASE STOCKS AND THE PRODUCT THEREOF

Edward Robbart, 15 Emerson Pl., Boston, Mass. 02115

Filed Nov. 16, 1983, Ser. No. 552,316
Int. Cl.[4] B32B *9/04, 9/06, 13/12, 15/04*
U.S. Cl. 428—447 **19 Claims**

1. In a method of coating webs of cellulosic base stocks wherein a coating material is applied to the web of the base stock so as to improve the properties thereof, the improvement comprising, prior to said coating, treating said web with dry vapors of a lower alkylhalogeno silane which react with hydroxyl groups in the cellulosic base stock to form a deposit of siloxane and polymers thereof on and integral with said web of cellulosic base stock, and forming a deposit of said coating material on said deposit of siloxane and polymers thereof.

10. In an article of manufacture wherein at least one side of a cellulosic substrate has applied thereto a layer of a coating material to improve the properties thereof, the improvement comprising a base layer for said coating material, said base layer being obtained by treating the cellulosic substrate with dry vapors of a lower alkylhalogeno silane which react with hydroxyl groups in the cellulosic substrate to form a deposit of siloxane and polymers thereof on and integral with said cellulosic substrate, and forming a deposit of said coating material on said deposit of siloxane and polymers thereof.

4,554,216

PROCESS FOR MANUFACTURING SUPPORT MATERIALS FOR OFFSET PRINTING PLATES

Dieter Mohr, Roemerberg, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 14, 1983, Ser. No. 466,087
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1982, 3206469
Int. Cl.[4] C25D *11/12;* **B41N** *1/08*
U.S. Cl. 428—469 **5 Claims**

1. A process for manufacturing support materials for offset-printing plates, comprising the step of:

subjecting a support member comprised of aluminum or an alloy thereof, which has been roughened by chemical, mechanical and/or electrochemical treatment, to a two-stage anodic oxidation treatment including a first stage (a) comprising anodic oxidation in an aqueous electrolyte consisting essentially of water sulfuric acid and Al^{3+} ion, so that at least one layer comprising aluminum oxide is deposited on said support member to a layer thickness of about 0.3 to 2.5 microns, and thereafter to a second stage (b) comprising anodic oxidation in an aqueous electrolyte which is different from that in stage (a) and which consists essentially of water and (i) at least one acid comprising an oxoanion of boron, vanadium, molybdenum, or tungsten or (ii) at least one salt having an alkali metal cation, an alkaline earth metal cation or an ammonium cation, and one of said oxoanions at a voltage between about 10 and 100 V, at a temperature of from about 10° to 60° C., and for a duration of from about 1 to 60 seconds.

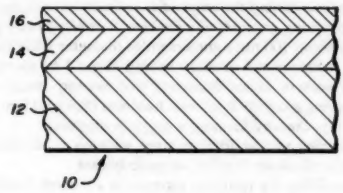
5. A support for offset-printing plates produced according to the process of claim 1.

4,554,217

PROCESS FOR CREATING WEAR AND CORROSION RESISTANT FILM FOR MAGNETIC RECORDING MEDIA

M. Andreas Grimm, Cupertino, and George W. Brock, Los Altos Hills, both of Calif., assignors to Verbatim Corporation, Sunnyvale, Calif.

Filed Sep. 20, 1984, Ser. No. 652,278
Int. Cl.[4] G11B *5/72*
U.S. Cl. 428—469 **11 Claims**



1. A wear and corrosion resistant magnetic recording member comprising:

a substrate;

a ferromagnetic recording layer; and

a protective layer composed of a ferromagnetic carbide film.

5. The method of producing a wear and corrosion resistant magnetic recording film in the steps of:

depositing a thin ferromagnetic metal recording film on the substrate by means of DC or RF sputtering and electron beam vacuum deposition, done in the presence of an inert gas at partial pressure; and

injecting high purity carbon monoxide gas into the sputter chamber during the final minutes of the sputter process sufficient to form a protective carbide layer on the recording film.

4,554,218

INFILTRATED POWERED METAL COMPOSITE ARTICLE

Richard N. Gardner, Grant Township, Washington County, and Kenneth R. Dillon, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 318,671, Nov. 5, 1981, abandoned. This application May 18, 1984, Ser. No. 611,924
The portion of the term of this patent subsequent to Apr. 27, 1999, has been disclaimed.
Int. Cl.[4] B22F *3/00, 1/00*
U.S. Cl. 428—567 **34 Claims**

1. A metal composite article comprising:

(a) granules of a first metal or alloy of about 1 to about 100 micrometers mean diameter;

(b) a monolithic skeleton comprising a solid second metal or alloy having a higher Rockwell hardness than said first metal or alloy, said second metal or alloy fully enveloping the majority of said granules of first metal or alloy, the latter being uniformly dispersed in said skeleton; and

(c) a continuous metallic phase occupying the connected porosity in said skeleton, said continuous phase comprising a solid third metal or alloy which wets said skeleton, has a Rockwell hardness less than or equal to the Rockwell hardness of said second metal or alloy, and has a melting point below the melting point of said second metal or alloy;

said article thereby comprising two intermeshed matrices and being substantially free of voids.

18. A precision molded die cavity comprising:

(a) less than about 15 volume percent granules of tungsten of about 1 to about 44 micrometers mean diameter;

(b) about 35 to about 70 volume percent of a monolithic

ferroalloy skeleton, said ferroalloy fully enveloping the majority of said tungsten granules, all of the latter being uniformly dispersed in said skeleton; and

(c) about 15 to about 50 volume percent of a continuous metallic phase comprising copper, said continuous metallic phase occupying the connected porosity in said skeleton:

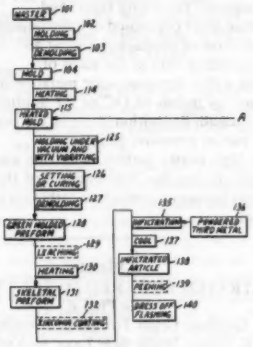
said article thereby comprising two intermeshed matrices and being substantially free of voids.

24. A process for forming a precision molded composite article, comprising the steps of:

(a) blending granules of a first metal or alloy having about 1 to about 100 micrometers mean diameter with granules of a second metal or alloy having about 1 to about 100 micrometers mean diameter, said second metal or alloy having a higher Rockwell hardness than said first metal or alloy, thereby forming a uniform mixture;

(b) mixing said uniform mixture with up to 50 volume percent of a heat fugitive, organic binder;

(c) molding the resulting mixture in a heated flexible mold, cooling said mold and its contents to room temperature,



and demolding said contents by applying a vacuum to the outside of said mold thereby forming an essentially void-free green molded preform having the size and shape of said mold;

(d) heating said green molded preform to thermally remove said binder and form a rigid, handleable skeletal preform;

(e) placing said skeletal preform in contact with a third metal or alloy which will wet said skeleton and which has a Rockwell hardness less than or equal to the Rockwell hardness of said second metal or alloy;

(f) infiltrating said skeletal preform with said third metal or alloy by heating said skeletal preform and said third metal or alloy above the melting point of said third metal, but below the melting point of said second metal or alloy, whereby said third metal or alloy melts and wicks into the connected porosity of said prerorm by capillary action and said second metal or alloy fully envelopes the majority of said granules of first metal or alloy, with the proviso that said granules of first metal or alloy do not completely dissolve in said second metal or alloy; and

(g) cooling the infiltrated part to room temperature to form a substantially void-free precision molded article.

4,554,219

SYNERGISTIC BRIGHTENER COMBINATION FOR AMORPHOUS NICKEL PHOSPHORUS ELECTROPLATINGS

Rodger L. Gamblin, Dayton, Ohio, assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed May 30, 1984, Ser. No. 615,271
Int. Cl.[4] C25D *5/12*
U.S. Cl. 428—667 **19 Claims**

1. A method producing a leveled electroplated coating comprising the steps of:

(a) adding to an electroplating bath including nickel and phosphorus ions as the primary constituents thereof, at least one compound selected from the group consisting of unsaturated organic compounds that are class II brightening agents, and at least one organic acid in an amount between one part in 60 and one part in 10, based on the volumes of the organic acid and the bath, respectively selected from the group having the formula

R—COOH

wherein R is alkyl having 1-5 carbon atoms, hydrogen, NH_2CH_2—, CH_3CHOH—, $HOCH_2$—, or $ClCH_2$—; the amount and type of unsaturated organic compound class II brightening agent being selected so as to cooperate with said organic acid to enhance leveling;

(b) immersing an object to be electroplated, and removing the object once electroplated, so that it has at least one surface thereof with leveled amorphous nickel-phosphorus electroplated thereon, and

(c) overplating the leveled amorphous nickel-phosphorus coating with chromium.

15. A coated object comprising:

a base surface of electrically conductive material;

a level coating of amorphous nickel-phosphorus on said surface; and

a bright overplating of chromium on said level amorphous nickel-phosphorus coating.

4,554,220

MAGNETIC RECORDING MEDIA

Nobuyuki Yamamoto; Katsumi Ryoke; Nobuo Tsuji, all of Kanagawa; Yuzo Higaki, and Toshihisa Okamura, both of Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Japan and Nisshin Oil Mills, Ltd., Japan

Filed Aug. 2, 1983, Ser. No. 519,645
Claims priority, application Japan, Aug. 2, 1982, 57-133805
Int. Cl.[4] G11B *5/70*
U.S. Cl. 428—694 **12 Claims**

1. A magnetic recording medium, comprising a non-magnetic support base having positioned thereon, a magnetic layer containing a ferromagnetic powder and an ester derived from a polyhydric alcohol selected from the group consisting of pentaerythritol and pentaerythritol condensates and a mixture of fatty acids and resin acids.

4,554,221

RECHARGEABLE BATTERY PACK

Hartmut Schmid, North Vancouver, Canada, assignor to DSL Dynamic Sciences Limited, St. Laurent, Canada

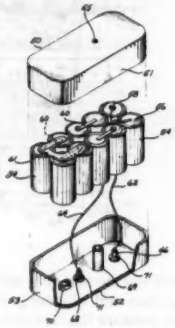
Filed Jan. 23, 1985, Ser. No. 693,983
Int. Cl.[4] H01M *2/00*
U.S. Cl. 429—1 **20 Claims**

1. A rechargeable battery pack constructed so as to be releasably connected to an electrical coupling of a device to be powered, said electrical coupling having a pair of male connectors and a pair of locating pins, said battery pack comprising:

a plurality of rechargeable batteries positioned in side-by-side relationship with the ends thereof arranged in two opposed groups;

a top cover positioned on one of said groups of ends, said top

cover having peripheral edges that fit over the sides of said batteries, said top cover having a locating hole; and a bottom cover positioned on the other one of said groups of ends, said bottom cover having peripheral edges that fit over the sides of said batteries, said bottom cover having a pair of female connectors and a pair of locating holes, said female connectors being connected to said batteries to



provide terminals of opposite polarity, said female connectors and locating holes being arranged for complementary mating engagement with the male connectors and locating pins, respectively, of said electrical coupling, one of said locating holes being cooperatively aligned with the locating hole in the top cover to receive one of said locating pins.

4,554,222

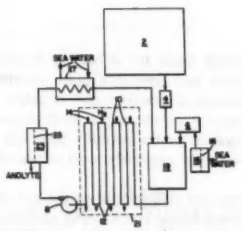
METAL-CONSUMING POWER GENERATION APPARATUS AND METHODS

Solomon Zaromb, 9S 706 William Dr., Hinsdale, Ill. 60521

Continuation-in-part of Ser. No. 179,274, Aug. 18, 1980, Pat. No. 4,416,954, which is a continuation-in-part of Ser. No. 704,452, Jul. 12, 1976, Pat. No. 4,305,999, and a continuation-in-part of Ser. No. 20,967, Mar. 16, 1979, Pat. No. 4,218,520, and a continuation-in-part of Ser. No. 80,185, Oct. 1, 1979, Pat. No. 4,254,190, and a continuation-in-part of Ser. No. 238,626, Feb. 26, 1981, Pat. No. 4,369,234, which is a division of Ser. No. 80,185, Oct. 1, 1979, Pat. No. 4,254,190. This application Sep. 29, 1982, Ser. No. 428,472

Int. Cl.⁴ H01M *12/06, 8/06*

U.S. Cl. 429—19 **8 Claims**



1. In an electric power source comprising an electrochemically consumable reactive metal anode and a hydrogen-evolving water-consuming cathode, the improvements wherein said anode comprises a slurry of reactive metal particles suspended in an electrolyte solution and impinging upon a substantially inert current collector, wherein said reactive particles appertain to the family of metals or alloys containing aluminum, lithium, sodium, magnesium or calcium, and wherein said power source comprises a supply of said reactive particles which are not in contact with said electrolyte solution, and means for feeding these particles from said supply to said slurry upon demand.

4,554,223

FUEL CELL APPARATUS

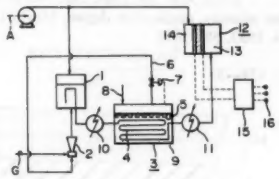
Eiji Yokoyama, Kashiwa; Tadao Kaneko, Inagi; Yoshiaki Amano, Ibaraki, and Shigeo Sugimoto, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 9, 1984, Ser. No. 639,099

Claims priority, application Japan, Aug. 17, 1983, 58-149189

Int. Cl.⁴ H01M *8/06*

U.S. Cl. 429—20 **9 Claims**



1. A fuel cell apparatus comprising a reformer for reforming a fuel such as natural gas, etc. into a gas containing much hydrogen, a shift converter for catalytically converting most of carbon monoxide contained in the gas leaving the reformer to carbon dioxide, and a fuel cell for generating an electric current from the gas leaving the shift converter and air, wherein the shift converter comprises:

(a) a reaction tube filled with at least one catalyst, one end of the reactor tube being connected to the outlet of the reformer and the other end being connected to the inlet of an anode of the fuel cell,

(b) a vessel encasing the reaction tube and also containing a liquid for cooling the reactor tube,

(c) a vapor discharge means provided at the vessel for discharging vapor of the liquid generated by the heat of reaction from the reaction tube,

(d) a means for leading the liquid to the vessel only in an amount corresponding to at least an amount of the vaporized liquid, provided at the vessel, and

(e) a means for keeping a constant pressure in the vessel.

4,554,224

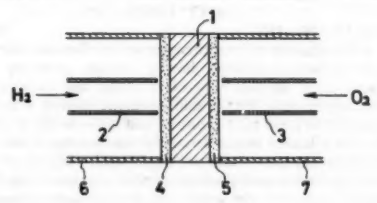
HYDROGEN-OXYGEN SOLID ELECTROLYTE FUEL CELL

Osamu Nakamura, Ikeda; Isao Ogino, Minoo, and Masakazu Adachi, Takarazuka, all of Japan, assignors to Agency of Industrial Science and Technology and Ministry of International Trade and Industry, both of Tokyo, Japan

Filed Jan. 30, 1984, Ser. No. 575,215

Int. Cl.⁴ H01M *8/10, 4/86*

U.S. Cl. 429—30 **4 Claims**



1. A hydrogen-oxygen solid electrolyte fuel cell comprising an oxidizing agent electrode formed of an oxidizing agent

electrode catalyst and a conducting agent, a fuel electrode, a solid electrolyte disposed between said two electrodes, and housings for supplying oxygen to said oxidizing agent electrode and hydrogen to said fuel electrode, which fuel cell is characterized by said solid electrolyte being one member selected from the group consisting of 12-molybdophosphoric acid and 12-tungstophosphoric acid, and said oxidizing agent electrode catalyst being Cu_2O.

4,554,225

MOLTEN CARBONATE FUEL CELL

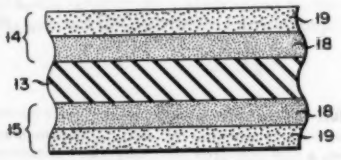
Atuo Sounai, Yokohama, and Kenji Murata, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 29, 1984, Ser. No. 594,980

Claims priority, application Japan, Mar. 31, 1983, 58-55998; May 24, 1983, 58-91013

Int. Cl.⁴ H01M *8/14*

U.S. Cl. 429—34 **6 Claims**



1. A molten carbonate fuel cell comprising unit cells each having an electrolyte layer in a plate-like form which contains a carbonate melted at an operating temperature, a cathode and an anode which are formed in tight contact to sandwich the electrolyte layer and which respectively comprise plates of porous material, an element for supplying fuel gas to the interface between the cathode and the electrolyte layer through pores in the cathode, and another element for supplying an oxidant gas to the interface between the anode and the electrolyte layer through pores of the anode,

characterized in that

each of said cathode and said anode comprises a bilayered structure having a first porous layer which is in contact with said electrolyte layer and a second porous layer which is located at the side of said element for supplying said fuel or oxidant gas and which comprises a sintered layer of a fibrous material, pores in at least a portion of said first porous layer, which is adjacent to said electrolyte layer, have a size capable of capillary action of the molten carbonate and pores of said second porous layer have a size not capable of capillary action of the molten carbonate.

4,554,226

FLAT CELL BATTERY CONNECTOR SEAL

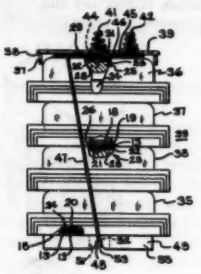
Robert D. Simonton, 1900 Hampton Rd., Fremont, Ohio 43420

Continuation of Ser. No. 540,021, Oct. 7, 1983, abandoned. This application Mar. 26, 1985, Ser. No. 715,779

Int. Cl.⁴ H01M *6/46*

U.S. Cl. 429—153 **10 Claims**

1. An alkaline cell comprising a sealed, flexible, sheet plastic, non-conductive evelope, having spaced, generally parallel, major walls; alkaline electrolyte within said evelope; a rigid conductive plate within said envelope having a major face adjacent an inner face of one of said major walls of said envelope of a lateral extent generally conforming to and slightly less than said face of said one major wall; a connector conductively joined to said conductive plate and extending from the central region of said major face through said one major wall of said envelope at a central region thereof, said one major wall engaging said connector portion passing therethrough; an adhesive bond between said major face of said plate and said adjacent inner face of said one major wall of said envelope surrounding said extending connector and substantially coextensive with said major face of said plate; a continuously compressed resilient pad on the exterior of said one major wall of said envelope, said pad being substantially coextensive with



said adhesive bond and surrounding said extended connector; and means to maintain said resilient pad compressed to apply generally uniform pressure through said resilient pad over the coextensive areas of said one major wall of said envelope, said adhesive bond and said conductive plate.

4,554,227

ALKALINE BATTERY

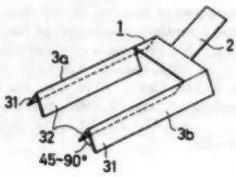
Tokujiro Takagaki; Tetsuo Sasaki, and Haruo Seike, all of Kyoto, Japan, assignors to Japan Storage Battery Company Limited, Japan

Filed Feb. 24, 1984, Ser. No. 583,479

Claims priority, application Japan, Jul. 18, 1983, 58-131739; Jul. 25, 1983, 58-136345

Int. Cl.⁴ H01M *2/02*

U.S. Cl. 429—178 **9 Claims**



1. A connecting piece for a battery having positive and negative terminals and having a plate assembly formed by winding or laminating positive and negative plates with a separator interposed therebetween so that the edges of said positive and negative plates partially protrude from opposite end faces of said plate assembly, said connecting piece comprising:

at least one current collector disposed across a plurality of said protruding edges, and forming an elongated V-shaped channel having an upper ridge and two lower edges joined by slanting surfaces which together define said V-shape, said two lower edges being welded to said protruding edges so that said lower edges are crosswise engaged with plural protruding edge portions, each said current collector having a free end and a base end, said base ends being joined by a bridging portion; and

a lead formed at one end of said at least one current collector for connecting said at least one current collector to one of said positive or negative terminals.

4,554,228

NEGATIVE ELECTRODE FOR LEAD ACCUMULATORS

Reiner Kiessling, Anröchte, Fed. Rep. of Germany, assignor to Hagen Batterie AG, Soest, Fed. Rep. of Germany

Filed Apr. 6, 1984, Ser. No. 597,668

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1983, 3312550

Int. Cl.[4] H01M 4/74

U.S. Cl. 429—242 21 Claims

1. In a negative electrode for lead accumulators in the form of a rectangular expanded metal grid plate of copper having upper and lower ends forming upper and lower crossing points of said grid which serves as a carrier for an active mass and for current supply and extraction, the direction of stretching of the expanded metal extending parallel to an end of the rectangular grid plate at which a connection lug is provided, and wherein a lead strip, unitary with a connection lug, is conductively secured to one end of said grid plate over the whole length thereof, improvement wherein the lead strip is cast onto the grid plate and said copper grid is covered by a lead or lead-tin alloy layer.

4,554,229

MULTILAYER HYBRID INTEGRATED CIRCUIT

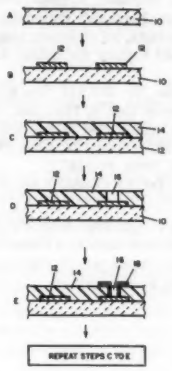
Richard D. Small, Jr., Lawrence Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Apr. 6, 1984, Ser. No. 597,626

Int. Cl.[4] G03C 3/00; H05K 1/00

U.S. Cl. 430—17 9 Claims

1. A multilayer circuit device comprising a substrate having a metallized pattern thereon and a plurality of polymeric dielectric film layers each having a metallized circuit pattern thereon with metallized microvias interconnecting the metallized patterns of one layer with that of at least one other metallized layer thereunder, said polymeric dielectric layer being formed from a photodefinable triazine base mixture including a



photosensitive acrylate moiety wherein the triazine comprises from 40–65 weight percent of the mixture.

4,554,230

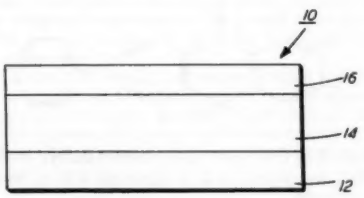
ELECTROPHOTOGRAPHIC IMAGING MEMBER WITH INTERFACE LAYER

Geoffrey M. T. Foley, Fairport, and Rudolph C. Enck, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 11, 1984, Ser. No. 619,247

Int. Cl.[4] G03G 5/082, 5/14

U.S. Cl. 430—58 16 Claims



1. An electrophotographic imaging member comprising a substrate, a charge transport layer comprising selenium, said charge transport layer containing less than about 20 parts per million by weight halogen, a thin continuous interface layer of halogen doped selenium overlying said charge transport layer, said interface layer of halogen doped selenium consisting essentially of selenium and about 35 parts per million to about 600 parts per million by weight halogen, and at least one selenium-tellurium alloy photoconductive charge generating layer overlying said thin continuous interface layer.

4,554,231

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER

Shozo Ishikawa, Sayama; Kiyoshi Sakai, Mitaka; Minoru Mabuchi, Tokyo; Katsunori Watanabe, Yamato, and Makoto Kitahara, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha and Copyer Kabushiki Kaisha, both of Tokyo, Japan

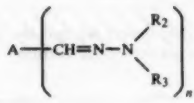
Continuation of Ser. No. 299,575, Sep. 4, 1981, abandoned. This application Dec. 9, 1983, Ser. No. 560,255

Claims priority, application Japan, Sep. 26, 1980, 55-132966; Sep. 26, 1980, 55-132967; Sep. 26, 1980, 55-132969; Oct. 6, 1980, 55-138714; Oct. 6, 1980, 55-138715

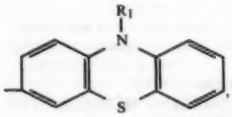
Int. Cl.[4] G03G *5/06, 5/14*

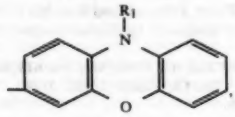
U.S. Cl. 430—59 **18 Claims**

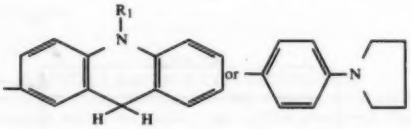
1. An electrophotographic photosensitive member which comprises a conductive support, a charge generation layer, and a charge transport layer which contains a hydrazone compound represented by the formula



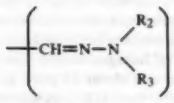
wherein R_2 and R_3 are each unsubstituted alkyl or substituted alkyl, unsubstituted aralkyl or substituted aralkyl, or unsubstituted aryl or substituted aryl, with the proviso that R_2 and R_3 are not alkyls at the same time, n is 1 or 2, when n is 1, A is







wherein R_1 is C_1–C_5 alkyl, unsubstituted aralkyl, or substituted aralkyl, and when n is 2, A represents a direct single bond between two



radicals and a binder.

4,554,232

MAGNETIC TONER

Kazunori Tabaru; Takafumi Aoyama, and Toshio Kumakura, all of c/o Hitachi Metals, Ltd., 1-2, 2-chome, Marunouchi, Chiyoda-Ku, Tokyo, Japan

Continuation of Ser. No. 944,353, Sep. 21, 1978, abandoned. This application Sep. 23, 1980, Ser. No. 190,035

Claims priority, application Japan, Sep. 22, 1977, 52-113337; Sep. 22, 1977, 52-113338

Int. Cl.[4] G03G *9/14*

U.S. Cl. 430—106.6 **8 Claims**

1. A magnetic toner of the single component type comprising magnetic particles and a resin, wherein said resin comprises at least 5% by weight based on the total weight of resin, of epoxy resin cross-linked with about 0.2 to 7.2% by weight, based on the weight of the epoxy resin, of a primary or secondary aminosilane.

4,554,233

ELECTROPHOTOGRAPHIC TONER CONTAINING TRIAZOLIUM COMPOUND AS CHARGE CONTROLLING AGENT

Mitsuru Hashimoto, Numazu; Toshiyasu Kawabata, Shizuoka; Toshiki Nanya, and Hisao Murayama, both of Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

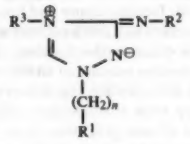
Filed Oct. 5, 1983, Ser. No. 539,348

Claims priority, application Japan, Oct. 28, 1982, 57-188251

Int. Cl.[4] G03G *9/14*

U.S. Cl. 430—106.6 **15 Claims**

1. A toner for developing latent electrostatic images comprising particles composed of a mixture of a colorant, a binder agent and a charge controlling agent of the formula



wherein R^1, R^2 and R^3 independently represent an unsubstituted or substituted aromatic ring; and n is 0 or 1.

4,554,234

TONER APPLICATION METHOD AND COMPOUND THEREFOR

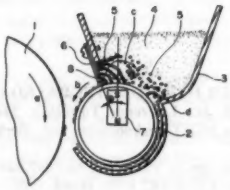
Eiichi Imai, Narashino; Masanori Takenouchi, Urawa; Masaki Uchiyama, Nakamachi, and Koshi Suematsu, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1984, Ser. No. 658,788

Claims priority, application Japan, Oct. 19, 1983, 58-195606

Int. Cl.[3] G03G *13/09, 13/08*

U.S. Cl. 430—122 **9 Claims**



1. A method for applying a toner comprising:

forming, in a container containing a toner and magnetic particles for application of the toner, a magnetic brush of the magnetic particles;

circulating the magnetic particles in the container; and

forming a thin layer of the toner electrically charged on the toner carrying member, wherein the magnetic particles have such shape characteristics that, where each magnetic particle is assumed to be circumscribed with the rectangular parallelepiped having edge lengths of a, b and c satisfying $a \geqq b \geqq c$ with the proviso that all of a, b and c are not the same, the average of b/a is from 0.4 to 1.0 and the average of c/a is from 0.4 to 0.95.

4,554,235

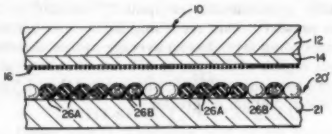
MICROENCAPSULATED TRANSFER IMAGING SYSTEM EMPLOYING DEVELOPER SHEET AND DISCONTINUOUS LAYER OF THERMOPLASTIC PIGMENT

Paul C. Adair, Chillicothe, and George D. Metz, Columbus, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed May 17, 1984, Ser. No. 611,284

Int. Cl.[4] G03C *1/71, 1/495, 1/68, 1/96*

U.S. Cl. 430—138 **20 Claims**



8. A microencapsulated imaging system comprising an imaging sheet including a support having a layer of photosensitive microcapsules on the surface thereof, said microcapsules containing a photohardenable or photosoftenable photosensitive composition as the internal phase and having a chromogenic material associated therewith; said system further comprising a developer sheet including a support, a developer layer containing a material which reacts with said chromogenic material to produce a color image, and a discontinuous layer of a thermoplastic polymeric pigment overlying said developer layer, said pigment forming an essentially transparent film upon application of heat or pressure.

4,554,236

AMINO ACID STABILIZERS FOR WATER SOLUBLE DIAZONIUM COMPOUND CONDENSATION PRODUCTS

Trisha Bentley, Somerville; John E. Walls, Hampton, and Major S. Dhillon, Somerville, all of N.J., assignors to American Hoechst Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 359,456, Mar. 18, 1982, abandoned. This application Oct. 19, 1983, Ser. No. 543,566

Int. Cl.[4] G03C *1/60, 1/94*

U.S. Cl. 430—157 **14 Claims**

1. A composition suitable for producing a light sensitive reproduction material, said reproduction material comprising a support and a reproduction layer thereon, which reproduction layer consists of said composition; said composition consisting of a light sensitive water soluble diazonium compound condensation product in admixture with an amino acid, said amino acid being present in an amount sufficient to substantially improve the heat stability of said diazonium compound condensation product, said amino acid imparts at least a 2½ fold increase in the time in which degradation of the diazonium compound occurs at 100° C.

11. A light sensitive reproduction material comprising a support and a reproduction layer thereon, said support comprising aluminum, and said reproduction layer comprising a light sensitive water soluble diazonium compound condensation product in admixture with an amino acid, said amino acid being present in an amount sufficient to substantially improve the heat stability of said diazonium compound condensation product, said amino acid imparts at least a 2½ fold increase in the time in which degradation of the diazonium compound occurs at 100° C.

4,554,237

PHOTOSENSITIVE RESIN COMPOSITION AND METHOD FOR FORMING FINE PATTERNS WITH SAID COMPOSITION

Fumio Kataoka; Fusaji Shoji, both of Yokohama; Hitoshi Yokono, Katsuta; Daisuke Makino, Mito; Shigeru Koibuchi, and Asao Isobe, both of Hitachi, all of Japan, assignors to Hitach, Ltd. and Hitachi Chemical Company, Ltd., both of Tokyo, Japan

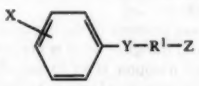
Filed Dec. 22, 1982, Ser. No. 452,198

Claims priority, application Japan, Dec. 25, 1981, 56-209424; Dec. 25, 1981, 56-209425

Int. Cl.[4] G03C *1/52, 1/60, 5/16*

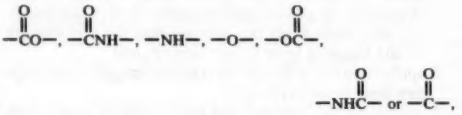
U.S. Cl. 430—197 **17 Claims**

1. A photosensitive resin composition which has a maximum absorption region of 290 nm or less and which comprises (a) at least one polymer compound selected from the group consisting of a novolak resin and a polyhydroxystyrene resin and (b) an azide compound represented by the general formula (1):

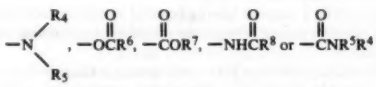


(1)

wherein X is $-N_3$ or $-SO_2N_3$, Y is



R^1 is a lower alkylene, a hydroxyalkylene or an aminoalkylene and Z is $-R^2$, $-OR^3$,



(wherein R^2 and R^6–R^8 are lower alkyl groups, R^4 and R^5 are lower alkyl or hydrogen, R^3 is hydrogen, a lower alkyl group or $-(CH_2CH_2O)_n R^9$ wherein n is an integer of 3 or less and R^9 is hydrogen or a lower alkyl group) and wherein the amount of the azide compound represented by the general formula (1) is 0.5 to 150 parts by weight per 100 parts by weight of the polymer compound.

11. A method for forming fine patterns which comprises coating on a substrate the photosensitive resin composition according to claim 3, drying the coated composition to form a coating film, exposing imagewise this film and developing the film with an alkaline aqueous solution to dissolve and remove the unexposed portions.

4,554,238

SPECTRALLY-SENSITIZED IMAGING SYSTEM

Stanley C. Bushman, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 20, 1984, Ser. No. 591,419

Int. Cl.[4] G03C *1/90*

U.S. Cl. 430—258 **26 Claims**

1. A photosensitive layer comprising a blend of:

(a) a light-transmissive film-forming polymeric material,

(b) at least one covalently-bonded, electron-accepting photolabile blocked surfactant when in said blend being

capable upon exposure to at least one wavelength of near UV, visible, or near IR radiation in the wavelength range 300 to 900 nm of releasing a detectable amount of surfactant in the exposed areas, and

(c) at least one electron-donating spectral sensitizing compound capable of conferring sensitivity to said surfactant to radiation within the wavelength range 300 to 900 nm.

16. A process of forming an image chosen from Processes I and II wherein

Process I comprises the steps of:

a. providing a support having bonded to one surface thereof a negative-acting imageable member comprising in sequence

(1) a frangible, thin layer,

(2) a photosensitive layer comprising a blend of:

(a) light-transmissive film-forming polymeric material;

(b) at least one covalently-bonded, electron-accepting, photolabile blocked surfactant when in said blend being capable upon exposure to radiation in the wavelength range of 300 to 900 nm of releasing a detectable amount of surfactant in the exposed areas, and

(c) at least one electron-donating spectral sensitizing compound capable of conferring sensitivity to said surfactant to radiation within the wavelength range of 300 to 900 nm, and

wherein the peel strength of the unexposed photosensitive layer to said frangible layer is greater than the peel strength of said frangible layer to said support,

b. exposing said photosensitive layer to radiation to which it is sensitive in an image-wise pattern at an intensity and for a time sufficient to release an image-wise pattern of released surfactant in the exposed area, wherein the peel strength of the exposed photosensitive layer to said frangible layer respectively becomes less than the peel strength of said frangible layer to said support, and

c. applying to the surface of the resulting imaged photosensitive layer an adherent layer,

d. separating the adherent and photosensitive layers from said support whereby in the exposed areas the frangible layer remains on said support whereas in the unexposed areas the frangible layer is removed from said support; and

Process II comprises the steps of:

a. providing a support having bonded to one surface thereof a positive-acting imageable member comprising in sequence

(1) a photosensitive layer comprising a blend of:

(a) light-transmissive film-forming polymeric material;

(b) at least one covalently-bonded, electron-accepting, photolabile blocked surfactant when in said blend being capable upon exposure to radiation in the wavelength range of 300 to 900 nm of releasing a detectable amount of surfactant in the exposed areas, and

(c) at least one electron-donating spectral sensitizing compound capable of conferring sensitivity to said surfactant to radiation within the wavelength range of 300 to 900 nm, and

(2) a frangible, thin layer,

b. exposing said photosensitive layer to radiation to which it is sensitive in an image-wise pattern at an intensity and for a time sufficient to release an image-wise pattern of released surfactant in the exposed area, wherein the peel strength of the unexposed photosensitive layer to said frangible layer is greater than the peel strength of said frangible layer to said adherent layer, and the peel strength of the exposed photosensitive layer to said frangible layer is less than the peel strength of said adherent layer to said frangible layer,

c. applying to the surface of the imaged photosensitive layer an adherent layer optionally on at least one surface of a second support,

d. separating the adherent layer from said actinic light sensitive area whereby the frangible layer in exposed areas is removed from the photosensitive layer and the frangible layer in unexposed areas remains on the photosensitive layer.

4,554,239

RECORDING MATERIAL CONTAINING A DYED THERMALLY COAGULATABLE PROTEINACEOUS COMPOUND

Takashi Kashiwagi, Tokyo, Japan, assignor to Process Shizai Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 449,291, Dec. 13, 1982, abandoned, which is a continuation of Ser. No. 242,759, Mar. 11, 1981, abandoned, which is a division of Ser. No. 59,369, Jul. 20, 1979, Pat. No. 4,288,509. This application Feb. 11, 1985, Ser. No. 700,072

Claims priority, application Japan, Jul. 21, 1978, 53-88276

Int. Cl.[4] G03C *1/76*; B32B *3/10*

U.S. Cl. 430—270 **8 Claims**

1. A thermal recording material for flash exposure and reflection printing comprising a transparent support having formed thereon a recording layer containing a thermally coagulatable proteinaceous compound, wherein a coloring material is present in said recording layer in an amount such that said recording layer has an average optical density in the wavelength region of 350 nm to 450 nm of at least about 1.5 and does not have an optical density greater than 1.5 at wavelength of about 560 nm or greater.

4,554,240

PHOTOSENSITIVE RECORDING MATERIAL WHICH CAN BE DEVELOPED WITH WATER, FOR THE PRODUCTION OF PRINTING PLATES, RELIEF PLATES OR RESIST IMAGES

Guenther Schulz, Ludwigshafen, and Manfred Zuerger, Sinsheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 25, 1984, Ser. No. 624,283

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1983, 3322994

Int. Cl.[4] G03C *1/68*

U.S. Cl. 430—285 **10 Claims**

1. A photosensitive water-developable recording material for the production of printing plates, relief plates or resist images, which comprises a photocurable relief-forming layer (RL) which is applied onto a dimensionally stable base, which layer (RL) includes

(a) as the sole photopolymerizable or photocrosslinkable component, a water-soluble or water-dispersible polyvinyl alcohol derivative which contains not less than 65 mole % of free hydroxyl groups, from 1 to 12 mole % of side groups possessing olefinic photocrosslinkable double bonds, and from 0 to 30 mole % of hydroxyl groups which are esterified and/or etherified with other, non-olefinic radicals and

(b) one or more photopolymerization initiators.

5. A photosensitive recording material as set forth in claim **1**, wherein the olefinically unsaturated photopolymerizable or photocrosslinkable groups present in the polyvinyl alcohol derivative are radicals or derivatives of α,β-olefinically unsaturated carboxylic acids of 3 to 10 carbon atoms.

4,554,241

COLOR REPRODUCTION PROCESS

Wallace Edwards, P.O. Box 1265, Station B, Weston, Ontario, Canada (M9G 2R9)

Continuation-in-part of Ser. No. 595,815, Apr. 2, 1984, abandoned, which is a continuation-in-part of Ser. No. 485,668, Apr. 18, 1983, abandoned. This application Mar. 18, 1985, Ser. No. 712,659

Int. Cl.[4] G03F *7/00*

U.S. Cl. 430—301 **11 Claims**

1. A method of printing on a sheet member a realistic reproduction of a colored original, utilizing a minimum of two

different superimposed impressions, each with a different coloring medium, comprising:

(a) providing a colored original,

(b) creating a first printing plate intended to print a non-process red color, by

(1) making a green filter exposure of the original on a first means for recording a first optical image,

(2) making a blue filter exposure of the original on said first means,

steps (1) and (2) being carried out sequentially in any order,

(c) creating a second printing plate intended to print a second color different from that printed by said first plate, by

(3) making a red filter exposure of the original on a second means for recording a second optical image,

(4) making a blue filter exposure of the original on said second means,

steps (3) and (4) being carried out sequentially in any order,

(steps (b) and (c) being carried out in any order,

(d) providing a sheet member to receive two superimposed impressions, and

(e) using said first and second printing plates to print said red color and said different color, respectively, as the said superimposed impressions on said sheet member.

4,554,242

METHOD FOR PROCESSING COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shigeru Ohno; Shinzo Kishimoto, and Morio Yagihara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

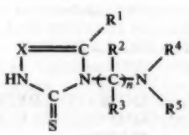
Filed Jan. 9, 1985, Ser. No. 690,068

Claims priority, application Japan, Jan. 12, 1984, 59-4018

Int. Cl.[4] G03C *7/00*

U.S. Cl. 430—393 **20 Claims**

1. A method for processing a color photographic light-sensitive material by subjecting an exposed silver halide color photographic light-sensitive material to color development, then to bleaching and fixing or then to bleach-fixing, which method comprises using a ferric ion complex salt as a bleaching agent in the bleaching or bleach-fixing and incorporating at least one compound represented by general formula (I) described below or a tautomer thereof:



(I)

wherein X represents N or C—R; R, R^1, R^2 and R^3, which may be the same or different, each represents a hydrogen atom, a halogen atom, an amino group, a hydroxyl group, a carboxyl group, a sulfo group or an alkyl group; R^4 and R^5, which may be the same or different, each represents a hydrogen atom, an alkyl group or an acyl group or R^4 and R^5 may be bonded to each other to form a ring, provided that both R^4 and R^5 do not represent a hydrogen atom at the same time; and n represents an integer of 0 to 5, in a bleaching bath, bleach-fixing bath or in a prebath of the bleach-fixing bath.

4,554,243

SILVER HALIDE MATERIAL WITH PHOTOGRAPHIC AGENT BLOCKED BY NUCLEOPHILIC ATTACK REMOVABLE GROUP

Mitsunori Ono, and Isamu Itoh, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

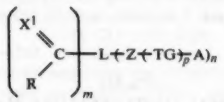
Filed May 25, 1984, Ser. No. 613,986

Claims priority, application Japan, May 25, 1983, 58-92083

Int. Cl.[4] G03C *1/40, 1/34, 1/42, 1/10*

U.S. Cl. 430—543 **36 Claims**

1. A silver halide photographic light-sensitive material which comprises a support having thereon a light-sensitive silver halide emulsion layer, wherein the photographic light-sensitive material therein contains a blocked photographic agent capable of releasing a photographically useful agent, wherein the blocked photographic agent is a compound represented by formula (I):



(I)

wherein X^1 represents an oxygen atom or a sulfur atom; Z represents an electrophilic group; A represents a photographically useful agent moiety; TG represents a timing group; L represents a linking group which is bonded to

through a carbon atom thereof and L is capable of forming a 5-membered to 7-membered ring upon a nucleophilic attack of the oxygen atom or sulfur atom represented by X^1 on the electrophilic group represented by Z, said linking group being selected from the group consisting of an alkylene group, an alkyloxyalkylene group, an alkylaminoalkylene group, an alkenylene group, an arylene group, a cyclocyclene group, a heterocyclene group, an alkyleneamino group, an alkenyleneamino group, an aryleneamino group, a cyclocycleneamino group, a heterocycleneamino group and combinations thereof; R represents a hydrogen atom or a substituent which is bonded through a carbon atom thereof; m and n each is an integer of from 1 to 3; and p is 0 or 1.

3. A silver halide photographic light-sensitive material as in claim 1, wherein the photographic material is a silver halide color photographic light-sensitive material containing a color forming coupler.

4,554,244

SILVER HALIDE PHOTOSENSITIVE MATERIALS FOR COLOR PHOTOGRAPHY

Ryosuke Sato; Katsunori Kato; Takashi Sasaki, and Hiroshi Sugita, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 540,719, Oct. 11, 1983, Pat. No. 4,465,766, which is a division of Ser. No. 522,818, Aug. 12, 1983, Pat. No. 4,451,559, which is a continuation of Ser. No. 385,096, Jun. 4, 1982, abandoned. This application Jun. 4, 1984, Ser. No. 616,652

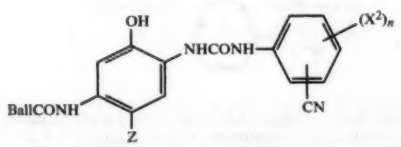
Claims priority, application Japan, Jun. 11, 1981, 56-90334; Jun. 11, 1981, 56-90335; Jun. 11, 1981, 56-90336

The portion of the term of this patent subsequent to May 29, 2001, has been disclaimed.

Int. Cl.[4] G03C *7/26*

U.S. Cl. 430—552 **10 Claims**

1. A silver halide photosensitive material for color photography which comprises a phenol type cyan coupler having the formula



wherein

X^2 is a hydrogen atom, a halogen atom, a hydroxy group, a nitro group or a monovalent organic group;

Z is a hydrogen atom or a removable group upon coupling reaction of an oxidized product of a color developing agent;

Ball is a ballast group;

the CN group is positioned ortho or meta to the —NHCONH— group; and n is an integer of 0 to 4 inclusive; provided that, when n is 2 or more, each X^2 group may be the same or different.

4,554,245

COLOR REVERSAL LIGHT-SENSITIVE MATERIALS

Yasuhiro Hayashi; Naoyasu Deguchi; Hiroyuki Yamagami; Kensuke Goda, and Kazunori Hasebe, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 30, 1984, Ser. No. 575,376

Claims priority, application Japan, Jan. 28, 1983, 58-12276

Int. Cl.⁴ G03C *1/76*

U.S. Cl. 430—567 **16 Claims**

1. A color reversal photographic light-sensitive material, comprising:

a support base having thereon:

a silver halide emulsion layer comprised of a mixture of fine grain silver halide latent image forming particles having a particle size of 0.3μ or less, the fine grain particles being present in the emulsion in an amount in the range of about 30% to about 95% based on the total number of silver grains in the emulsion layer, and coarse grain silver halide latent image forming particles having a particle size of more than 0.3μ;

an organic compound present in the emulsion layer, the compound being an additive for improving tone reproduction and having a solubility product constant of 10^{-14} or less when forming a salt with a silver ion; and

colloid grains of an ingredient selected from the group consisting of metal, a metal sulfide and silver halide grains the surface of which is previously fogged, the colloid grains being present in a layer selected from the group consisting of the silver halide emulsion layer and a hydrophilic colloid layer, wherein said organic compound is a heterocyclic mercapto compound.

4,554,246

PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE MATERIAL

Kiyohiko Yamamuro; Yasuo Iwasa, and Isamu Itoh, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

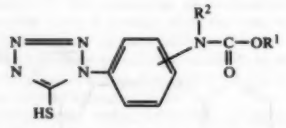
Filed Oct. 13, 1983, Ser. No. 541,649

Claims priority, application Japan, Oct. 13, 1982, 57-179378; Dec. 29, 1982, 57-230912

Int. Cl.⁴ G03C *1/06, 7/26, 1/84*

U.S. Cl. 430—611 **11 Claims**

1. A photographic silver halide light-sensitive material containing at least one of the compounds represented by general formula (I) as described below, their salts, and their precursors releasing the compounds of general formula (I) on cleavage under alkali conditions



(I)

wherein R^1 is a substituted or unsubstituted aliphatic group, or a substituted or unsubstituted aromatic group, and R^2 is a hydrogen atom, a substituted or unsubstituted aliphatic group, or a substituted or unsubstituted aromatic group; R^1 and R^2 are the same or are different and can combine together to form a ring.

4,554,247

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Kiyotoshi Yamashita, Hachioji; Minoru Ishikawa, Fussa; Hideo Ohta, and Kenji Kumashiro, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Feb. 13, 1984, Ser. No. 579,765

Claims priority, application Japan, Feb. 15, 1983, 58-23609

Int. Cl.⁴ G03C *1/30*

U.S. Cl. 430—622 **13 Claims**

1. A silver halide photographic material having as essential photographic layers at least one photosensitive silver halide emulsion layer and at least one nonsensitive hydrophilic colloidal layer on a support, at least one of said photographic layers containing fine oil globules at a density in the range of 1 to 100, and a hardener having at least three functional groups being incorporated in at least one photographic layer containing said fine oil globules and/or at least one photographic layer which is farther from said support than the photographic layer containing said fine oil globules, wherein the combination of said hardener and said density of 1 to 100 is effective to provide said silver halide photographic material with improved image sharpness and reduced bleeding.

4,554,248

COMPOSITION AND METHOD FOR DETECTING ANTISTREPTOLYSIN O

Lorrence H. Green, Westbury, and John W. Roberts, Commack, both of N.Y., assignors to American Home Products Corporation, New York, N.Y.

Filed Nov. 8, 1982, Ser. No. 440,049

Int. Cl.⁴ G01N *33/54;* **C12Q** *3/00, 1/00, 1/04, 1/06;* **C12N** *9/99, 1/36;* **A61K** *39/02*

U.S. Cl. 435—7 **17 Claims**

6. A method for preparing a dry reversibly hemolytically inactive Streptolysin O (SO) reagent comprising mixing SO with a member selected from the group consisting of an acid, base or buffer in amount sufficient to maintain the pH greater than about 9 or less than about 5; drying the mixture, and isolating the dried reversibly hemolytically inactive SO which is suitable for analytical use for the detection of Antistreptolysin O(ASO) in a sample.

4,554,249

METHOD FOR THE QUANTITATIVE DETERMINATION OF PHYSIOLOGICAL COMPONENTS IN BIOLOGICAL FLUIDS

Akira Kosaka, Seto; Sawao Murao, Sakai; Kenichi Hirano, Iwakura; Noriaki Tanaka, Sakai, and Kuniyoshi Matsunaga, Ichinomiya, all of Japan, assignors to Amano Pharmaceutical Company Limited, Japan

Filed Oct. 25, 1982, Ser. No. 436,385

Claims priority, application Japan, Feb. 18, 1982, 57-25613; Jul. 23, 1982, 57-127632; Jul. 23, 1982, 57-127633

Int. Cl.⁴ C12Q *1/60, 1/54, 1/62, 1/26, 1/25;* **C12N** *9/02;* **C07G** *17/00, 7/00*

U.S. Cl. 435—10 **19 Claims**

1. In the method for the quantitative determination of an unknown concentration of a physiological component selected from the group consisting of glucose, cholesterol, neutral fats, free fatty acids, phospholipids and uric acid present in a biological fluid which comprises:

(a) reacting said component with an oxidizing enzyme in the presence of a color producing reagent, wherein the improvement comprises:

(b) pretreating or treating said biological fluid at an alkaline pH without the formation of H_2O_2, under conditions and for a sufficient amount of time to remove bilirubin with a second enzyme selected from the group consisting of Myrothecium sp. bilirubin oxidase, Coprinus sp. bilirubin

oxidase, lacquer plant laccase and basidiomycete laccase, together with

(c) at least one additive agent selected from the group consisting of surface active agents, aromatic carboxylic acids, sulfa drugs, and proteases.

4,554,250

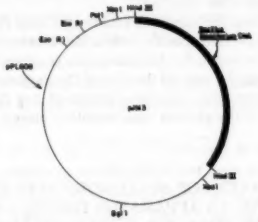
METHOD OF INCREASED PRODUCTION OF PENICILLIN ACYLASE AND PLASMID EMPLOYED THEREIN

John E. McCullough, Whitehouse Station, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 30, 1983, Ser. No. 509,501

Int. Cl.[4] C12N *15/00, 1/20, 9/86, 1/00*

U.S. Cl. 435—172.3 **5 Claims**



1. Plasmid PJM3 characterized in that it has the entire nucleotide sequence of *Bacillus subtilis* plasmid pPL608 and an insert which is a 2.7 kb chromosomal DNA fragment of *Bacillus megaterium* ATCC 14945 containing the gene for penicillin acylase production which is inserted at the Hind III site of pPL608.

4,554,251

PROCESS AND MEDIUM FOR CULTURING ANT VENOM GLAND CELLS

Walter F. Hink, Jr., Columbus, Ohio, assignor to The Ohio State University Research Foundation, Columbus, Ohio

Filed Nov. 7, 1983, Ser. No. 549,170

Int. Cl.[4] C12N *5/00;* **C12P** *1/00;* **C12R** *1/91;* **A01N** *63/02;* **A61K** *35/58*

U.S. Cl. 435—240 **39 Claims**

1. A process for culturing cells of the venom gland of the ant, *Pseudomyrmex triplarinus,* which process comprises:

removing venom gland tissue from a member of the species *Pseudomyrmex triplarinus;*

subjecting said removed venom gland tissue to the action of a protease and separating the individual cells in said venom gland tissue from one another;

culturing said separated cells in a cell culture medium substantially isotonic with said cells, said medium having a pH of about 7 and comprising at least about 5 g/l of carbohydrate, at least about 4 g/l of amino acids, at least about 4 g/l of adenosine 3',5'-cyclic monophosphoric acid, at least about 0.01 mg/l of isoproterenol, at least about 0.1 mg/l of guanosine 3',5'-cyclic monophosphate, at least about 10^{-7} g/l of hydrocortisone, at least about 10^{-7} g/l of epidermal growth factor, at least about 0.01 mg/l of fibroblast growth factor, at least about 10 mg/l of insulin, at least about 1 mg/l of transferrin and a source of at least about 1 mg/l of selenium, at least part of said medium having been conditioned, prior to contact with said cells, with *Spodoptera frugiperda* cells.

4,554,252

PLANT TISSUE CULTIVATION PROCESS

Tibor Farkas; László Vigh; Ibolya Horváth; Anikó Nagy née Vanicsek; Ferenc Föglein, all of Szeged; Annamária Mészáros, Budapest, and István Tóth, Sajóbábony, all of Hungary, assignors to Északmagyarországi Vegyimüvek, Sajóbábony, Hungary

Filed Dec. 13, 1982, Ser. No. 449,071

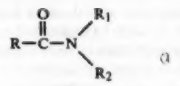
Claims priority, application Hungary, Dec. 18, 1981, 3840/81

Int. Cl.[4] C12N *5/00*

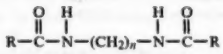
U.S. Cl. 435—240 **5 Claims**

1. A process for improving the efficiency of in vitro propagation and tissue cultivation by tissue culture of cultivated plants, which comprises the step of:

treating the seeds or the roots of seedlings during micropropagation and subsequent planting or during micropropagation or subsequent planting, with an aqueous solution of 1–100 milligrams per liter of a compound of the formula



or mixtures thereof, or a compound of the formula



or mixtures thereof; wherein

R is methyl, chloromethyl, dichloromethyl or trichloromethyl;

R_1 and R_2 are each independently hydrogen, alkyl containing between 1 and 10 carbon atoms, alkenyl containing between 2 and 10 carbon atoms, cycloalkyl containing between 3 and 9 carbon atoms, phenyl, or benzyl, with the proviso that at least one of R_1 and R_2 is other than hydrogen; and

n is an integer from 1 to 8.

4,554,253

APPARATUS FOR SYNTHESIZING ADENOSINE-5'-TRIPHOSPHATE

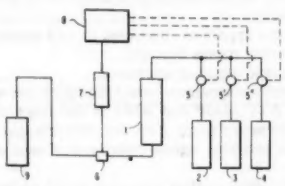
Kazutomo Imahori, No. 2-25-23, Kakinokisaka, Meguro-ku, Tokyo; Tatsuo Iwasaki, Kyoto; Hiroshi Nakajima, Kyoto; Hitoshi Kondo, Kyoto; Isao Tomioka, Kyoto; Masaru Kashima, Osaka, and Toshihiko Tsukamoto, Kyoto, all of Japan, assignors to Kazutomo Imahori; Rikagaku Kenkyusho and Unitika Ltd., all of, Japan

Filed Jan. 26, 1983, Ser. No. 461,309

Claims priority, application Japan, Jan. 26, 1982, 57-10338

Int. Cl.[4] C12M *1/40*

U.S. Cl. 435—288 **8 Claims**



1. An apparatus for converting AMP into ATP comprising:

(a) an enzyme reactor having outlet conduit means and inlet conduit means, wherein said enzyme reactor contains:

(1) an enzyme which converts AMP into ADP, wherein said enzyme has been produced from microorganisms

having an optimum growth temperature of 50° C. to 85° C., and also contains

(2) an enzyme which converts ADP into ATP, wherein said enzyme has been produced from microorganisms having an optimum growth temperature of 50° C. to 85° C.;

(b) a source of AMP, wherein said source is connected to said enzyme reactor by said inlet conduit means;

(c) a source of phosphoric acid donator for converting AMP into ADP, wherein said source is connected to said enzyme reactor by said inlet conduit means;

(d) a source of phosphoric acid donator for converting ADP into ATP, wherein said source is connected to said enzyme reactor by said inlet conduit means;

(e) at least one variable fluid sending apparatus connected between each of said sources (b), (c) and (d), and said enzyme reactor, wherein at least one of said variable fluid sending apparatus controls the flow of AMP from said source of AMP (b), the flow of phosphoric acid donator from said source of phosphoric acid donator (c) and the flow of phosphoric acid donator from said source of phosphoric acid donator (d), into said enzyme reactor;

(f) a recovery apparatus connected to said enzyme reactor outlet conduit means through;

(g) an automatic sampling apparatus;

(h) an analyzing apparatus which analyzes the concentrations of ATP, ADP and AMP in the reaction solution flowing from said enzyme reactor, wherein said analyzing apparatus provides signals indicative of said concentrations to;

(i) an arithmetical control apparatus which on the basis of signals received from said analyzing apparatus (h) and signals of previously prescribed values stored therein, provides signals to at least one of said variable fluid sending apparatus (e) to control the amount of flow from said sources (b), (c) and (d) to said enzyme reactor so as to maintain the ATP conversion in said enzyme reactor or the ATP concentration in said enzyme reactor outlet conduit means at previously prescribed values.

5. An apparatus for converting ADP into ATP comprising:

(a) an enzyme reactor having outlet conduit means and inlet conduit means, wherein said enzyme reactor contains:

(1) an enzyme which converts ADP into ATP, wherein said enzyme has been produced from microorganisms having an optimum growth temperature of 50° C. to 85° C.;

(b) a source of ADP, wherein said source is connected to said enzyme reactor by said inlet conduit means;

(c) a source of phosphoric acid donator for converting ADP into ATP, wherein said source is connected to said enzyme reactor by said inlet conduit means;

(d) at least one variable fluid sending apparatus connected between each of said sources (b) and (c) and said enzyme reactor, wherein at least one of said variable fluid sending apparatus controls the flow of ADP from said source of ADP (b) and the flow of phosphoric acid donator from said source of phosphoric acid donator (c) into said enzyme reactor;

(e) a recovery apparatus connected to said enzyme reactor outlet conduit means through;

(f) an automatic sampling apparatus;

(g) an analyzing apparatus which analyzes the concentrations of ATP, ADP and AMP in the reaction solution flowing from said enzyme reactor, wherein said analyzing apparatus provides signals indicative of said concentrations to;

(h) an arithmetical control apparatus which on the basis of signals received from said analyzing apparatus (g) and signals of previously prescribed values stored therein, provides signals to at least one of said variable fluid sending apparatus (d) to control the amount of flow from said sources (b) and (c) to said enzyme reactor so as to maintain the ATP conversion in said enzyme reactor or the ATP concentration in said enzyme reactor outlet conduit means at previously prescribed values.

4,554,254

PROTEIN ASSAY BY SILVER BINDING

Gerald Krystal, 1153 E. 19th Ave., Vancouver, B.C., Canada (V6V 1K9)

Filed Dec. 17, 1984, Ser. No. 682,338
Claims priority, application Canada, Dec. 4, 1984, 469261
Int. Cl.[4] G01N *21/78, 33/68*
U.S. Cl. 436—86 **19 Claims**

1. A method of measuring the concentration of protein in solution comprising:

(a) treating a protein containing sample solution with a silver-on-protein deposition enhancement agent;

(b) exposing the treated protein containing sample solution of step (a) above to a silver compound to develop a protein specific colour with the protein in the sample solution by protein-silver binding;

(c) terminating the exposure reaction of step (b) above after sufficient protein specific colour development and a minimum of non-specific darkening has occurred; and

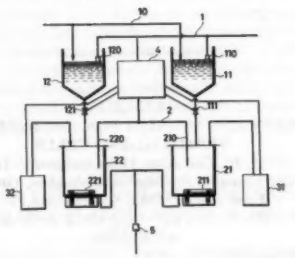
(d) measuring the optical density of the exposure terminated protein containing sample solution of step (c) above as a measure of the protein concentration above.

4,554,255

DETERMINATION OF SULFUROUS ACID IN LIQUIDS AND AN APPARATUS THEREFOR

Katsuyoshi Ishii; Michio Kobori, and Seiichi Morimoto, all of Nara, Japan, assignors to Sanwa Shoji Co., Ltd., Nara, Japan

Filed Jul. 6, 1983, Ser. No. 511,147
Claims priority, application Japan, Jul. 9, 1982, 57-120379
Int. Cl.[4] G01N *33/00, 33/16*
U.S. Cl. 436—102 **4 Claims**



1. A method for the determination of sulfurous acid in a liquid, comprising:

(a) measuring the pH value of a first sample of a liquid containing sulfurous acid,

(b) adding to said first sample of liquid an excess of hydrogen peroxide to convert said sulfurous acid to sulfuric acid, and measuring the pH value of said first sample of liquid containing hydrogen peroxide,

(c) adding a predetermined amount of an acid or a lower pH buffer solution to a second sample of said liquid containing sulfurous acid and measuring the pH value of said second sample of said liquid containing the acid or the lower pH buffer solution, and

(d) calculating the concentration of sulfurous acid in said liquid based on the above-measured pH values and an equation derived from the functional relationship:

$$c=f(\Delta pH_A, \Delta pH_B)$$

wherein c is the concentration of sulfurous acid contained in said sample liquid, ΔpH_A is the difference in pH value

between the pre- and the post-addition of hydrogen peroxide to said first sample of said liquid, and ΔpH_B is the difference in pH value between the pre- and the post-addition of an acid or a lower pH buffer solution to said second sample of said liquid.

2. An apparatus for determining the concentration of sulfurous acid in a liquid comprising:

(a) first and second measuring means for collecting predetermined amounts of a liquid containing sulfurous acid and generating first and second signals, respectively, when said first and second measuring means contain said predetermined amounts,

(b) first and second normally closed control valves operatively connected to said first and second measuring means, respectively, for dispensing liquid from said first and second measuring means,

(c) first and second pH-measuring means operatively connected to said first and second control valves, respectively, for receiving liquid from said first and second measuring means, respectively,

(d) first and second automatic burette means operatively connected to said first and second pH-measuring means, respectively,

(e) control means operatively connected to said first and second measuring means, said first and second control valves, said first and second pH-measuring means and said first and second automatic burette means, said control means having an operative mode wherein it receives said first and second signals and in response thereto generates third and fourth signals to open said first and second control valves, respectively, and dispense predetermined amounts of a liquid containing sulfurous acid from said first and second measuring means to said first and second pH-measuring means, respectively, to obtain first and second samples therein, said control means then generates fifth and sixth signals to activate said first and second pH-measuring means, respectively, to measure the pH of said first and second samples and generate seventh and eighth respective signals representative thereof, said control means receives and records said seventh and eighth signals and then generates a ninth signal to activate said first automatic burette means to add a predetermined amount of hydrogen peroxide to said first sample in said first measuring means, a tenth signal to activate said second automatic burette means to add a predetermined amount of an acid or low pH buffer solution to the second sample in said second pH-measuring means, and an eleventh and twelfth signal to activate said first and second pH measuring means after the addition of hydrogen peroxide, acid or low pH buffer solution to measure the pH of said first and second samples and generate thirteenth and fourteenth respective signals representative thereof, said control means receives and records said thirteenth and fourteenth signals and then calculates and displays the concentration of sulfurous acid in said liquid by an equation based on the functional relationship:

$$c=f(\Delta pH_A, \Delta pH_B)$$

wherein c is the concentration of sulfurous acid in said liquid, ΔpH_A is a value corresponding to a difference between said seventh and thirteenth signals, and ΔpH_B is a value corresponding to a difference between said eighth and fourteenth signals.

4,554,256

ANTIGEN ASSOCIATED WITH EARLY DETECTION OF MAMMALIAN PREGNANCY

R. Garth Sasser, Moscow, and William C. Hamilton, Emmett, both of Id., assignors to The Idaho Research Foundation, Inc., Moscow, Id.

Filed Jul. 21, 1983, Ser. No. 516,173
Int. Cl.[4] G01N *33/54, 33/56, 33/68*
U.S. Cl. 436—510 6 Claims

1. A method for detecting pregnancy of a bovine or ovine host, said method comprising:

combining serum or blood from said host with antibody which specifically binds to Protein B, said Protein B being characterized by having a molecular weight in the range of about 47–53 kD, an isoelectric point in the range of about 4.0–4.4 and isolatable from bovine placental membrane homogenates, and detecting complex formation between said antibody and an antigen present in said blood or serum, wherein complex formation is indicative of pregnancy of said host.

4,554,257

ASSAYING IMMUNOREACTIVE AND LIKE SUBSTANCES BY MEASUREMENT OF AGGREGATE CLASSES

Frederick J. Aladjem, and Padmasini K. Ayengar, both of 845 Las Palmas Rd., Pasadena, Calif. 91102

Filed Apr. 29, 1983, Ser. No. 489,734
Int. Cl.[4] G01N *33/54, 35/00*
U.S. Cl. 436—519 53 Claims

1. The method for assaying the extent of particle agglutination due to reaction of a first substance present on insoluble carrier particles and a complementary second substnace, comprising

identifying, for particle aggregate due to reaction of said substances, at least one limited class of aggregate for which the aggregate count or counts reflect espacially sensitively the overall extent of agglutination,

measuring individual particle aggregates due to the reaction to be assayed to develop for each measured aggregate electrical class signals distinctive of said class or classes,

processing the signals to derive the number of aggregate of each identified class,

and using the resulting number or numbers as a measure of the extent of agglutination.

4,554,258

CHEMICAL RESISTANT LEAD-FREE GLASS FRIT COMPOSITIONS

Josef Francel, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 28, 1984, Ser. No. 625,385
Int. Cl.[4] C03C *3/08*
U.S. Cl. 501—21 12 Claims

1. A glass frit composition that is free of lead, cadmium and arsenic, the composition having a fiber softening point of at least about 535° C., the composition having good chemical resistance and consisting essentially of the following components in parts by weight per 100:

COMPONENT	PARTS
Bi_2O_3	48–57
SiO_2	29–38
B_2O_3	3–8
R_2O	2–8
TiO_2	0–2
ZrO_2	0–8
Al_2O_3	0–2
BaO	0–4
ZnO	0–3
CaO	0–9

wherein RO is 0-about 9, R_2O_3 is about 57-64, and RO_2 is about 32-39, the alkali resistance in weight % loss being below about 0.9, measured using 9% sodium pyrophosphate at 60° C. for 8 hours, and the acid resistance in weight % loss being below about 0.9, measured using 4% by weight acetic acid for 24 hours at room temperature, RO being at least one of BaO, CaO or ZnO, and R_2O being an alkali metal oxide.

4,554,259

LOW EXPANSION, ALKALI-FREE BOROSILICATE GLASS SUITABLE FOR PHOTOMASK APPLICATIONS

Brian Franklin, Kingston, Pa., and Karl-Heinz Mader, Delligsen, Fed. Rep. of Germany, assignors to Schott Glass Technologies, Inc., Duryea, Pa.

Filed May 8, 1984, Ser. No. 608,304
Int. Cl.[4] C03C *3/08*
U.S. Cl. 501—67 **17 Claims**

1. An alkali-free glass having a refractive index of at least 1.50, an Abbe number of at least 55, a density of not more than 3.0, and a thermal expansion coefficient of not more than 40.5×10^{-7}/°C. over 20°–300° C., and consisting essentially of, in weight percent:

SiO_2	50-60%
B_2O_3	1-6%
Al_2O_3	12-15%
MgO	0-2.5%
CaO	0-5.1%
BaO	9-10%
ZnO	12-18%
CeO_2	0-5%
As_2O_3 + Sb_2O_3	0-1.5%
PbO	0-1%

Sum MgO×CaO×BaO ×ZnO=21-33.5.

4,554,260

TWO STAGE PROCESS FOR IMPROVING THE CATALYST LIFE OF ZEOLITES IN THE SYNTHESIS OF LOWER OLEFINS FROM ALCOHOLS AND THEIR ETHER DERIVATIVES

Wim J. M. Pieters, Morristown, N.J., and Yoshiharu Okumura, Tokyo, Japan, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 13, 1984, Ser. No. 630,636
Int. Cl.[4] B01J *29/28*
U.S. Cl. 502—61 **4 Claims**

1. A process for modifying a crystalline shape selective acidic metalosilicate zeolite free of coke deposits thereon, wherein said metal of the metalosilicate is selected from the group consisting of aluminum, gallium and mixtures thereof to improve the catalyst life thereof when said modified zeolite is used to convert a hydrocarbon feed comprising at least one member selected from the group consisting of monohydric alcohols having from 1 to about 4 carbon atoms, ethers derived from said alcohols, and mixtures thereof, to an olefin containing product at a conversion reaction temperature of from about 300° to about 350° C., which zeolite, prior to said modification, is:

(a) capable of catalyzing said hydrocarbon conversion reaction;

(b) has a channel size and structure such as to permit (i) entry of the hydrocarbon feed into the zeolite and diffusion to the active acid sites within the zeolite, and (ii) formation of olefin products within said zeolite and diffusion of said products out of the zeolite; and

(c) hydrothermally stable at temperatures of at least about 290° C.; which process comprises:

(A) contacting said zeolite with coke precursor forming hydrocarbon feed from a period of from about 0.5 to about 4 hours, said coke precursor forming hydrocarbon feed being (i) comprised of at least one member selected from the group consisting of monohydric alcohols having from 1 to about 4 carbon atoms, ethers derived from said alcohols, olefins having from about 1 to about 5 carbon atoms, and mixtures thereof; and (ii) heated to a temperature of from about 320° to about 350° C.; and

(B) contacting the zeolite, treated in accordance with Step (A), with an inert gas heated to a temperature of from about 350° to about 425° C. for a period of at least 1 hour, the inert gas being selected from the group consisting of nitrogen, helium, argon, methane and mixtures thereof.

4,554,261

COMPOSITION AND METHOD FOR REMOVING CHLORAMINE FROM WATER CONTAINING SAME

Anthony J. Gergely, Converse, and Ralph A. Nichols, Kerrville, both of Tex., assignors to Jungle Laboratories Corporation, Cibolo, Tex.

Filed Jul. 23, 1984, Ser. No. 633,027
Int. Cl.[4] B01J *20/16*
U.S. Cl. 502—62 **8 Claims**

1. A composition for the removal of chloramine from water comprising a zeolite having a coating of sodium thiosulfate thereon.

8. A composition for the removal of chloramine from water comprising clinoptilolite resin having a coating thereon of a mixture of sodium thiosulfate, ascorbic acid and methylene blue.

4,554,262

CHIRAL HYDROGENATING CATALYSTS

Ralph M. Dessau, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 1, 1984, Ser. No. 655,816
Int. Cl.[4] B01J *29/10, 29/30*
U.S. Cl. 502—62 **11 Claims**

1. A process for preparing an asymmetric hydrogenation catalyst which comprises contacting a Group VIII metal-containing acidic zeolite with an optically active amine.

5. The process of claim 1 wherein said optically active amine is selected from the group consisting of (S)-(−)-alpha-methylbenzylamine and (S)-(−)-2-methylbutylamine.

6. The process of claim 1 wherein said optically active amine is selected from the group consisting of (S)-(+)-alanine, (S)-(+)-valine and (R)-(−)-valine.

4,554,263

CATALYSTS FOR HYDROTREATING HEAVY OILS

Jun Fuchikami, Koga, and Takemithu Yano, Kitakyushu, both of Japan, assignors to Catalysts & Chemicals Industries Co., Ltd., Tokyo, Japan

Filed May 3, 1984, Ser. No. 606,795
Claims priority, application Japan, May 10, 1983, 58-81568
Int. Cl.[4] B01J *29/14, 29/16*
U.S. Cl. 502—66 **9 Claims**

4. A catalyst for hydrotreating heavy oils, which comprises: a hydrogenation, metal catalyst deposited on a catalyst carrier, said hydrogenation, metal catalyst comprising a first metal selected from the group consisting of nickel, cobalt, and mixture thereof, and a second metal selected from the group consisting of molybdenum, tungsten and mixture thereof, said catalyst carrier comprising a mixture of Y-faujasite, alumina and sulfate anions ($SO_4^=$), said catalyst containing incorporated therein from 1 to 15 wt. % of said sulfate anions.

4,554,264

PROCESS FOR PRODUCING α-OLEFIN POLYMERS USING NOVEL CATALYST SYSTEM

Akinobu Shiga, Koganei; Toshio Sasaki, Ichihara; Junpei Kojima, Ichihara, and Akira Nunose, Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 16, 1984, Ser. No. 631,177
Claims priority, application Japan, Jul. 27, 1983, 58-138471
Int. Cl.[4] C08F 4/64
U.S. Cl. 502—112 8 Claims

1. A solid catalyst component for polymerization of α-olefins obtained by steps of

(i) reducing titanium tetrachloride with an organoaluminum compound represented by the general formula $R^1_nAlY_{3-n}$, wherein R^1 represents a C_1–C_{18} hydrocarbon group, Y represents a halogen, and n represents a number satisfying $1<n<3$,

(ii) heat-treating the reduction product at a temperature range of 70° to 130° C., wherein the period of the heat treatment is between 15 minutes and 6 hours,

(iii) treating the thus obtained solid product containing γ-titanium trichloride by preliminary polymerization of an α-olefin in the presence thereof, wherein the amount of α-olefin preliminary polymerized is 0.01 to 5 g per 1 g of the solid product,

(IV) reacting the resulting solid product with a halogen represented by the general formula X_2, wherein X represents Cl, Br, or I, and/or an interhalogen compound represented by the general formula X'X"a, wherein X' and X" represent each Cl, Br, or I and a represents 1 or 3, and with an ether compound represented by the general formula R^2—O—R^3, wherein R^2 and R^3 are the same or different and represent each a C_1–C_{10} alkyl group, in a hydrocarbon solvent at a temperature of 50° to 100° C.

4,554,265

POLYMERIZATION CATALYST

Victoria Graves, Crosby, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 29, 1984, Ser. No. 626,172
Int. Cl.[4] C08F 4/64
U.S. Cl. 502—113 20 Claims

1. A supported olefin polymerization catalyst prepared under anhydrous conditions by the steps of:

(1) sequentially

(a) preparing a slurry of inert particulate support material;

(b) adding to said slurry a solution of an organomagnesium compound,

(c) adding to said slurry and reacting a solution of zirconium compound, and

(2) thereafter

(d) adding to said slurry and reacting a halogenator,

(e) adding to said slurry and reacting a tetravalent titanium compound, and

(f) recovering solid catalyst.

4,554,266

COPPER-MAGNESIUM CATALYST AND METHOD FOR ALKYLATION OF HYDROXYAROMATIC COMPOUNDS THEREWITH

James G. Bennett, Glenmont, and Gregory R. Chambers, Delmar, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 3, 1983, Ser. No. 500,683
Int. Cl.[4] B01J 23/00; C07C 37/16
U.S. Cl. 502—344 29 Claims

1. A method for preparing a solid composition which comprises initially blending (1) a magnesium reagent which yields magnesium oxide upon calcination with (2) copper in elemental or chemically combined form and calcining the resulting blend at a temperature within the range of about 350°–550° C., the amounts of said basic magnesium reagent and copper being such that the calcined product contains about 0.25–2% copper by weight based on magnesium oxide.

13. A catalyst composition comprising an intimate blend of magnesium oxide and copper in elemental or chemically combined form, the amount of said copper being about 0.25–2% by weight based on said magnesium oxide.

4,554,267

CATALYST AND METHOD FOR ORTHO-ALKYLATION OF HYDROXYAROMATIC COMPOUNDS

Gregory R. Chambers, Rexford, and James G. Bennett, Jr., Glenmont, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 3, 1983, Ser. No. 500,684
Int. Cl.[4] B01J 23/76; C07C 37/16
U.S. Cl. 502—340 29 Claims

1. A method for preparing a solid catalyst composition which comprises preparing, at a temperature within the range of about 50°–100° C., a slurry of (1) a substantially water-insoluble magnesium reagent which yields magnesium oxide upon calcination in (2) an aqueous solution of at least one copper salt, the copper content of said slurry being about 0.02–0.1% by weight of the magnesium reagent content thereof, thereby producing a magnesium-containing solid phase with a copper-containing coating of submicroscopic thickness thereon; removing and drying said solid phase; and calcining the same at a temperature within the range of about 350°–550° C.

15. In a method for alkylating at least one hydroxyaromatic compound having a free ortho-position by the catalytic reaction of the same with at least one primary or secondary alkanol containing up to 7 carbon atoms, the improvement which comprises carrying out said reaction at a temperature up to about 475° C. in the presence of a solid catalyst composition prepared by a method which comprises preparing, at a temperature within the range of about 50°–100° C., a slurry of (1) a substantially water-insoluble magnesium reagent which yields magnesium oxide upon calcination of (2) an aqueous solution of at least one copper salt, the copper content of said slurry being about 0.02–0.1% by weight of the magnesium reagent content thereof, thereby producing a magnesium-containing solid phase with a copper-containing coating of submicroscopic thickness thereon; removing and drying said phase; and calcining the same at a temperature within the range of about 350°–500° C.

4,554,268

PROCESS FOR THE PREPARATION OF MODIFIED REFRACTORY OXIDES

Emmanuel E. A. Neel; Jacques A. Levavasseur, both of Grand-Couronne, France, and Donald Reinalda, Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 17, 1984, Ser. No. 650,745
Claims priority, application France, Oct. 14, 1983, 83 16373
Int. Cl.[4] B01J 21/04, 21/08
U.S. Cl. 502—439 18 Claims

1. A process for the preparation of modified refractory oxides which comprises: (1) impregnating, via an impregnation solution, a refractory oxide or mixtures thereof, said impregnation solution comprising:

(i) a solution of a hydrocarbyl ammonium metallate; or

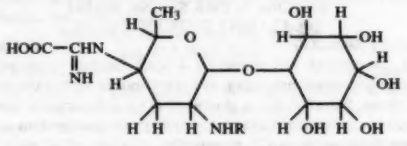
(ii) two solutions, said first of said two solutions containing a hydrocarbyl ammonium hydroxide and said second of said two solutions containing a compound of a metal selected from the group consisting of a metal of Group IIA, IIIA, IVA, and IVB of the Periodic Table of Elements; and after said impregnation; (2) drying said modified refractory oxide at a temperature of from 50°–250° C.; (3) calcining said dried modified refractory oxide at a temperature of from 250°–1000° C.; and (4) recovering the resultant calcined modified refractory oxide.

4,554,269
KASUGAMYCIN DERIVATIVES, PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE

Takao Takaya, Kawanishi; Nobuyoshi Yasuda, Nishinomiya; Hideo Tsutsumi, Toyonaka, and Keiji Matsuda, Takatsuki, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jan. 24, 1984, Ser. No. 573,377
Claims priority, application United Kingdom, Jan. 28, 1983, 8302439; Jun. 20, 1983, 8316699
Int. Cl.[4] A61K *31/71*; C07H *15/20*
U.S. Cl. 514—35 13 Claims

1. Aminoglycoside derivatives of the formula:



wherein R is higher alkanoyl or higher alkenoyl having 7 to 24 C atoms, and pharmaceutically acceptable salts thereof.

5. A method of treating a viral infection comprising administering to a patient subjected to such infection an effective amount of the compound of claim 1 or pharmaceutically acceptable salts thereof.

4,554,270
PESTICIDAL COMPOSITION CONTAINING A SYNERGISTIC COMBINATION OF 3-HYDROXYMETHYLACRYLIC ACID METHYL ESTER DIMETHYLTHIONOPHOSPHATE AND CYPERMETHRIN

Volker Dittrich, Zeiningen, Switzerland, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 500,491, Jun. 2, 1983, Pat. No. 4,500,521. This application Nov. 16, 1984, Ser. No. 672,049
Claims priority, application Switzerland, Jun. 7, 1982, 3505/82
Int. Cl.[4] A01N *57/00*
U.S. Cl. 514—120 2 Claims

1. A composition for control of insects and acarids which comprises at least an insecticidally and acaricidally effective amount of a mixture of (i) methyl 3-hydroxymethacrylate-O,O-dimethylthionophosphate and (ii) alpha-cyano-3-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropane carboxylate in a weight ratio of from about 3500:1 to about 10:1 in a carrier therefor.

4,554,271
USE OF HIGH DOSES OF DERIVATIVES OF 6α-METHYLPREDNISOLONE FOR THE ACUTE TREATMENT OF STROKE SYNDROME

J. Mark Braughler, Kalamazoo, and Edward D. Hall, Portage, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 24, 1984, Ser. No. 582,987
Int. Cl.[4] A61K *31/56*
U.S. Cl. 514—179 5 Claims

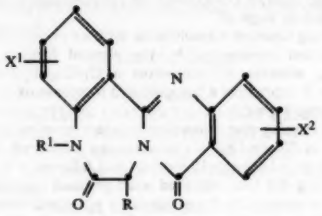
1. A method of treating stroke syndrome which comprises administering intravenously to a human in need of such treatment, an amount of a compound selected from the group consisting of a water soluble 21-dibasic ester of 1-dehydro-6α-methylhydrocortisone and their salts, molar equivalent to from about 60 mg/kg/day to about 100 mg/kg/day of 1-dehydro-6α-methylhydrocortisone, in a pharmaceutically acceptable carrier.

4,554,272
SUBSTITUTED QUINAZOLINO-1,4-BENZODIAZEPIN-6,9-DIONES AND THEIR PREPARATION

Mark G. Bock, and Roger M. Freidinger, both of Hatfield,, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 25, 1985, Ser. No. 695,119
Int. Cl.[4] A61K *31/55*; C07D *403/14*
U.S. Cl. 514—219 11 Claims

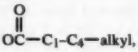
1. A compund of the formula:



(I)

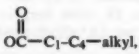
wherein:

X^1 and X^2 are independently selected from H, Br, Cl, F, OH,

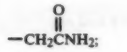


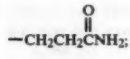
and O-C_1–C_4-alkyl;

R is H; C_1–C_5-alkyl; hydroxy-C_1–C_4alkyl; C_3–C_7-cycloalkyl; C_1–C_5-aralkyl, wherein the aryl moiety is phenyl or naphthyl, which is unsubstituted or monosubstituted on the aromatic ring by Br, Cl, F, OH, O-C_1–C_4-alkyl, O-CH_2-phenyl,

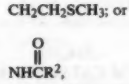


NO_2, CN, CF_3, or OSO_3H; CH_2-imidazole; CH_2-thiophene; CH_2-2-indole; CH_2-3-indole; CH_2-2-indoline; CH_2-3-indoline;

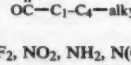




$CH_2CH_2SCH_3$; or



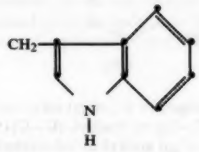
where R^2 is C_1–C_4-alkyl; C_3–C_7-cycloalkyl; C_1–C_4-aralkyl, wherein the aryl moiety is phenyl or naphthyl, which is unsubstituted or monosubstituted on the ariomatic ring by Br, Cl, F, OH, O-C_1–C_4-alkyl,



C_1–C_4-alkyl, CF_2, NO_2, NH_2, $N(CH_3)_2$, CN or S-C_1–C_4-alkyl; 2-indole or 3-indole, which is unsubstituted or monosubstituted by F, Cl, Br, OH, NO_2 or O-C_1–C_4-alkyl;

thiophene; imidazole; benzofuran; benzothiophene; or benzimidazole; and

R^1 is H, or C_1–C_4-alkyl, or $(CH_2)_nCO_2H$, where n is 1 to 3; (excluding compounds where X^1 and X^2 are H, R is



and R^1 is H) and pharmaceutically-acceptable salts thereof.

7. A method of effecting cholesystokinin inhibition in mammals which comprises administering an effective amount of a compound according to claim 1.

4,554,273

2-AMINO-5-PHENYL-1,3-BENZODIAZEPINES

Michel Bayssat, Charbonnieres; Gerard Ferrand, and Jean-Claude Depin, both of Lyons, all of France, assignors to Lipha Lyonnaise Industrielle Pharmaceutique, Paris, France

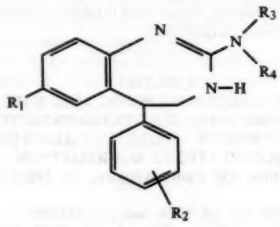
Filed Feb. 7, 1984, Ser. No. 578,046

Claims priority, application France, Feb. 16, 1983, 83 02475

Int. Cl.⁴ A61K *31/55;* **C07D** *243/04, 403/12, 403/04*

U.S. Cl. 514—221 **12 Claims**

1. A 2-amino-5-phenyl-1,3-benzodiazepine, of the formula I



I

wherein R_1 and R_2 are hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, with R_2 capable of occupying any vacant position on the aromatic ring; R_3 is hydrogen or C_1–C_4 alkyl; R_4 is hydrogen; C_1–C_4-alkyl; C_4–C_7 cycloalkyl; arylalkyl or heteroarylalkyl of the formula Ar-Alk wherein Ar is pyridyl, 2-furyl, unsubstituted phenyl or phenyl mono- or poly-substituted with halogen, C_1–C_4-alkyl, C_1–C_4 alkoxy, nitro, or amino, and Alk is methylene or ethylene substituted or unsubstituted with hydroxy; di(c_1–C_4-alkyl)aminoethyl; di(C_1–C_4-alkyl)amino; C_1–C_4-alkoxycarbonyl; or cyano with the proviso that when R_4 is cyano, R_3 is hydrogen; or R_3 and R_4 form, with the adjacent nitrogen atom, methyl piperazinyl;

or a pharmaceutically acceptable salt thereof.

10. A method for treating depression in mammals comprising administering a compound of claim 1 to said mammal in an amount sufficient to alleviate depression.

4,554,274

N_bQUATERNARY DERIVATIVES OF AJMALINE AND ISOAJMALINE, METHODS AND INTERMEDIATE PRODUCTS IN THE MANUFACTURE OF THEIR DERIVATIVES AND METHOD OF USING SAME AND PHARMACEUTICAL COMPOSITIONS THEREOF

Wolfgang Kehrbach, Hanover; Joachim Wegener, Algermissen; Ulrich Kuehl, Hanover; Renke Budden, Hanover, and Gerd Buschmann, Hanover, all of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

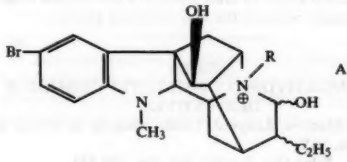
Continuation of Ser. No. 391,822, Jun. 24, 1982, abandoned, which is a continuation of Ser. No. 195,487, Oct. 9, 1980, abandoned. This application May 31, 1984, Ser. No. 615,757

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1979, 2941529

Int. Cl.⁴ A61K *31/435;* **C07D** *455/00, 471/08*

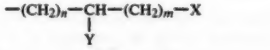
U.S. Cl. 514—239 **8 Claims**

1. A N_b-quaternary 10-bromoajmaline and 10-bromoisoajmaline compound of the formula I



(I)

wherein R is a carbon-attached organic residue containing 1 to 10 carbon atoms and having the formula II



(II)

wherein n is 0 or 1; m is 0 or 1; x is hydrogen, hydroxy straight or branched alkyl which is unsubstituted or is substituted by hydroxy, alkoxy, halogen or dialkylamine, phenyl which is unsubstituted or is substituted by alkyl alkoxy or halogen, dialkylamine, pyrrolidine, piperidine or morpholine; and y is hydrogen, hydroxy or methyl or x and y together form a bond with the proviso that when y is hydroxy n is 1 and that when x and y together form a bond n and m each are 1 and $A^{\ominus}$ is an anion of a pharmacologically acceptable organic or inorganic acid.

7. A pharmaceutical composition comprising a cardiac rhythm regulative effective amount of a compound as defined in claim 1 and an inert pharmaceutical carrier.

8. A method of treating heart rhythm disorders in larger mammals which comprises administering to a larger mammal an effective amount of a compound as defined in claim 1.

4,554,275

TRIAZINE DERIVATIVES

Kenji Sempuku, Suita; Yoshihisa Shibata, Kameoka, and Tadaaki Ohgi, Nagaokakyo, all of Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

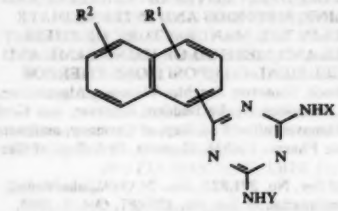
Filed Dec. 12, 1983, Ser. No. 560,445

Claims priority, application Japan, Dec. 10, 1982, 57-217529

Int. Cl.⁴ C07D *251/18, 401/12;* **A61K** *31/455, 31/53*

U.S. Cl. 514—245 **18 Claims**

1. A compound of the formula (I):



(I)

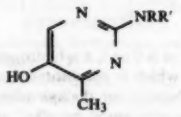
or a pharmaceutically acceptable salt thereof wherein R^1 and R^2 are the same or different and each is halo, alkoxy of 1 to 4 carbon atoms or aralkyloxy of 1 to 4 carbon atoms in the alkyl moiety; or R^1 and R^2 are each hydroxy, wherein the aryl moiety is phenyl; and X and Y are each hydrogen or nicotinoyl or at least one of X and Y is nicotinoyl and R^1 and R^2 are the same or different and each is hydrogen, hydroxy, halo, alkoxy of 1 to 4 carbon atoms or aralkyloxy of 1 to 4 carbon atoms in the alkyl moiety wherein the aryl moiety is phenyl.

4,554,276
2-AMINO-5-HYDROXY-4-METHYLPYRIMIDINE DERIVATIVES

John L. LaMattina, Ledyard, Conn., assignor to Pfizer Inc., New York, N.Y.

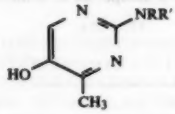
Filed Oct. 3, 1983, Ser. No. 538,233
Int. Cl.[4] A61K *31/505;* C07D *239/47*
U.S. Cl. 514—272 13 Claims

1. A pharmacologically - active substituted pyrimidine having the formula:



wherein R is hydrogen or methyl and R′ is hydrogen, (C_3–C_8) alkenyl, phenyl, furyl, thienyl, or phenylhexyl, or R and R′ together with the nitrogen atom to which they are attached form a substituted piperidyl group wherein the substituent is (C_7–C_{12}) phenylalkyl, or a pharmceutically-acceptable acid addition salt thereof.

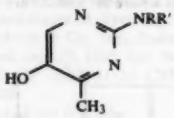
6. A pharmaceutical composition for the treatment of inflammation conditions or gastrointestinal disorders comprising an anti-inflammatory or gastric anti-secretory effective amount of a substituted pyrimidine having the formula:



(I)

wherein R is hydrogen or (C_1–C_{15}) alkyl and R′ is hydrogen, (C_1–C_{15}) alkyl, (C_5–C_8) cycloalkyl, (C_3–C_{15}) alkenyl, phenyl, furyl, thienyl, (C_7–C_{20}) aralkyl or substituted aralkyl wherein the substitutent is halo, (C_1–C_3) alkyl, (C_1–C_3) alkoxy or trifluoromethyl; or R and R′ together with the nitrogen atom to which they are attached form a piperidyl group, a substituted piperidyl group wherein the substitutent is (C_1–C_{15}) alkyl or (C_7–C_{20}) aralkyl, or a pyrrolidinyl group, or a pharmaceutically-acceptable acid addition salt thereof, in admixture with a pharmaceutically-acceptable dilent or carrier.

11. A method for the treatment of inflammation conditions in a patient, which comprises administering to the patient an anti-inflammatory effective amount of a substituted pyrimidine having the formula:



(I)

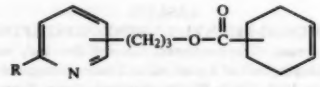
wherein R is hydrogen or (C_1–C_{15}) alkyl and R′ is hydrogen, (C_1–C_{15}) alkyl, (C_5–C_8) cycloalkyl, (C_3–C_{15}) alkenyl, phenyl, furyl, thienyl, (C_7–C_{20}) aralkyl or substituted aralkyl wherein the substitutent is halo, (C_1–C_3) alkyl, (C_1–C_3) alkoxy or trifluoromethyl; or R and R′ together with the nitrogen atom to which they are attached form a piperidyl group, a substituted piperidyl group wherein the substituent is (C_1–C_{15}) alkyl or (C_7–C_{20}) aralkyl, or a pyrrolidinyl group, or a pharmaceutically-acceptable acid addition salt thereof.

4,554,277
PYRIDYLPROPYL CYCLOHEXENE CARBOXYLATES AS INSECT REPELLENTS

Rayman Y. Wong, Richmond, Calif., assignor to Stauffer Chemical Co., Westport, Conn.

Filed Feb. 25, 1985, Ser. No. 705,172
Int. Cl.[4] C07D *213/55;* A61K *31/44*
U.S. Cl. 514—277 9 Claims

1. A compound having the formula



in which R is hydrogen or C_1–C_4 alkyl.

7. A method for repelling insects comprising applying to a locus to be protected from insects an amount of a compound according to claim 1, effective to repel insects from said locus.

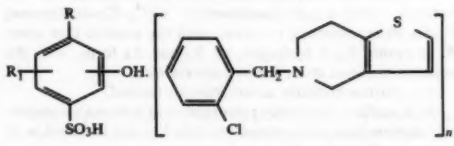
9. An insect repelling composition containing an amount of a compound according to claim 1 effective to repel insects from lighting or feeding, and an inert diluent or carrier suitable for insect repellent compositions.

4,554,278
HYDROXYBENZENESULFONIC ACID SALTS OF 5-(O-CHLOROBENZYL)-4,5,6,7-TETRAHYDROTHIENE [3,2-C] PYRIDINE USEFUL IN INHIBITING BLOOD-PLATELET AGGREGATION

Pietro T. Tessitore, Via Dante Alighieri, 71, 18038 Sanremo, Italy

Filed Jul. 28, 1983, Ser. No. 517,916
Claims priority, application Italy, Jul. 28, 1982, 22600 A/82
Int. Cl.[4] A61K *31/44;* C07D *471/04*
U.S. Cl. 514—301 4 Claims

1. A hydroxybenzenesulfonic acid salt of 5-(o-chlorobenzyl)-4,5,6,7-tetrahydrothieno[3,2-c]pyridine endowed with platelet aggregation inhibiting activity, with angioprotective activity and with normalizing activity of the blood lipids balance, of the formula (I)



wherein R is H or OH or SO_3H; R_1 is H or OH, provided that when R=OH, R_1 is always H; and n is 1 or 2.

4. A pharmaceutical composition having platelet aggregation inhibiting activity, angioprotective activity, and normalizing activity of the blood lipids balance, said composition having as active ingredient for the stated purposes an effective amount of a compound of the formula (I) as defined in claim 1, together with at least one pharmaceutically acceptable carrier and/or excipient.

4,554,279

5-(STRAIGHT CHAIN 3–12 CARBON ALKOXY)-8-QUINOLINAMINES AND THEIR USE FOR TREATMENT OF MALARIA

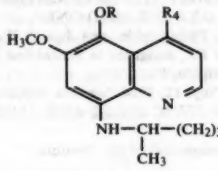
Andrew J. Saggiomo, and Edward A. Nodiff, both of Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 229,487, Jan. 29, 1981, abandoned. This application Mar. 31, 1983, Ser. No. 478,816

Int. Cl.⁴ A61K *31/47*; C07D *215/20*

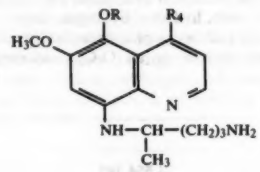
U.S. Cl. 514—311 **28 Claims**

1. A compound of the formula,



wherein R_4 represents hydrogen or methyl; R represents a straight-chain alkyl group having 3 to 12 carbon atoms; and pharmaceutically acceptable acid addition salts thereof wherein the salt forming acid is selected from the group consisting of hydrochloric acid, phosphoric acid, nitric acid, sulfamic acid, sulfuric acid, maleic acid, fumaric acid, citric acid, beta-resorcylic acid and pamoic acid.

26. A method for treating malaria caused by the presence of malaria parasites in the blood, formed tissues, or blood and formed tissues which comprises the step of administering orally to an infected animal an antimalarial effective amount of a compound having the formula:



wherein R_4 represents hydrogen or methyl; R represents a straight-chain alkyl group having 3 to 12 carbon atoms; and pharmaceutically acceptable salts thereof wherein the salt forming acid is selected from the group consisting of hydrochloric acid, phosphoric acid, nitric acid, sulfamic acid, sulfuric acid, maleic acid, fumaric acid, citric acid, beta-resorcylic acid and pamoic acid which has been admixed with an excipient selected from the group consisting of lactose, precipitated chalk, dibasic calcium phosphate, microcrystalline cellulose derivatives, maize starch, talc and calcium stearate.

4,554,280

PYRIDYL METHYL THIO OR SULFINYL INDENO(5,6-D)IMIDAZOLES

Anna Krassó , Basel, and Henri Ramuz, Birsfelden, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

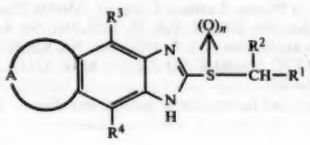
Division of Ser. No. 290,032, Aug. 5, 1981, Pat. No. 4,435,406. This application Dec. 12, 1983, Ser. No. 560,698

Claims priority, application Switzerland, Aug. 21, 1980, 6321/80

Int. Cl.⁴ C07D *401/12*; A61K *31/44*

U.S. Cl. 514—338 **20 Claims**

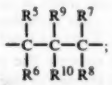
1. A tricyclic imidazole of the formula



I

wherein

R^1 is 2-pyridyl optionally substituted by lower alkyl or lower alkoxy, n is the integer 0 or 1, R^2 is hydrogen or lower alkyl, R^3 and R^4, independently, are hydrogen or lower alkyl, A is a group of the formula



(c)

R^5, R^6, R^7 and R^8, independently, are hydrogen or lower alkyl and R^9 is hydrogen and R^{10} is hydrogen or lower alkyl or R^9 and R^{10} taken together are oxo,

or pharmaceutically acceptable acid addition salt thereof.

4,554,281

2-AMINO-3-ACYLAMINO-6-BENZYLAMINO-PYRIDINE-DERIVATIVE HAVING ANTIEPILEPTIC ACTION

Walter vonBebenburg, deceased, late of Dreieich (by Marie vonBebenburg, executrix); Joachim Heese, Hanau; Jurgen Engel, Alzenau, all of Fed. Rep. of Germany, and Kurt Thiele, Zofingen, Switzerland, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

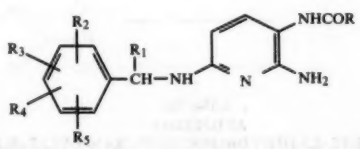
Filed Oct. 27, 1983, Ser. No. 545,930

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1982, 3239790

Int. Cl.⁴ A61K *31/44*; C07D *213/74*

U.S. Cl. 514—353 **11 Claims**

1. A method of combatting epilepsy comprising administering to a mammal in need thereof an effective amount for the treatment of epilepsy of a compound of the formula



I

where R is a C_1–C_4 alkyl group, a C_1–C_4 alkoxy group, a phenoxy group, or a phenyl C_1–C_2-alkoxy group, R_1 is hydrogen or a C_1–C_4 alkyl group and R_5 is hydrogen or a C_1–C_4 alkyl group and the groups R_2, R_3 and R_4 each is hydrogen trifluoromethyl, halogen, a C_1–C_4 alkyl group, a C_1–C_4-alkylcarbonylamino group, an aminosulfonyl group, a C_1–C_4-alkyl-

carbonyl group, or its pharmaceutically acceptable acid addition.

4,554,282

SUBSTITUTED 2,2-DIMETHYL-5-PHENOXYPENTANOIC ACID BENZAMIDES AS ANTI-ARTERIOSCLEROTIC AGENTS AND METHOD

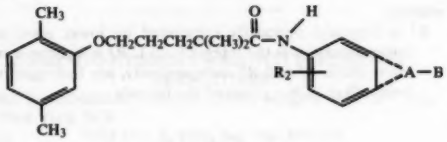
Ila Sircar, Ann Arbor, and Ann Holmes, Dexter, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 238,398, Feb. 26, 1981, Pat. No. 4,413,011. This application Aug. 5, 1983, Ser. No. 520,874

Int. Cl.[4] **C07C** *143/80;* **C07D** *213/34;* **A61K** *31/18, 31/44*

U.S. Cl. 514—357 **8 Claims**

1. A compound having the structural formula

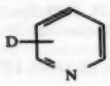


wherein the dotted lines indicate the presence of only one substituent which must be located at one of the specified positions, and

(a) A is $—CR_4{=}CR_5—$, where R_4 and R_5 are are trans to each other and are hydrogen or alkyl of from 1 to 6 carbon atoms, R_2 is hydrogen, hydroxy, halogen, alkyl of from 1 to 6 carbon atoms or alkoxy of from 1 to 6 carbon atoms, and B is SO_2NHR_6 where R_6 is hydrogen or alkyl of from 1 to 6 carbon atoms; or

(b) wherein A is a direct bond, R_2 is alkoxy of from 1 to 6 carbon atoms, and B is SO_2NHR_6 where R_6 is hydrogen or alkyl of from 1 to 6 carbon atoms; or

(c) wherein A is a direct bond, R_2 is hydrogen, and B is SO_2NHR_6 where R_6 is



where D is an alkylene group of from 1 to 6 carbon atoms.

4,554,283

APHICIDAL 3-(2-ALKYL-2,3-DIHYDROBENZOFURAN-7-YL)-5-(R,R[1]-AMINO)-1,3,4-OXADIAZOL-2(3H)-ONES

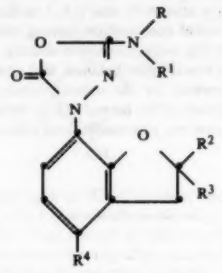
Kurt H. Pilgram, and Richard D. Skiles, both of Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 22, 1984, Ser. No. 643,331

Int. Cl.[4] **A01N** *43/82;* **C07D** *413/10*

U.S. Cl. 514—364 **2 Claims**

1. A compound of the formula:



(I)

wherein R is alkyl of one to three carbon atoms; R^1 is hydrogen or alkoxy of one to three carbon atoms; R^2 is alkyl of one to three carbon atoms; R^3 and R^4 each is hydrogen or alkyl of one to three carbon atoms.

2. A method for protecting a plant from aphids which comprises applying to the plant an aphicidally effective dosage of a compound of claim 1.

4,554,284

7-(2-AMINOETHYL)-1,3-BENZTHIA- OR OXA-ZOL-2(3H)-ONES

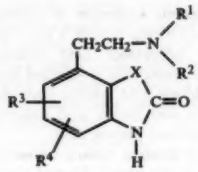
Orum D. Stringer, Philadelphia, and Joseph Weinstock, Phoenixville, both of Pa., assignors to Smithkline Beckman Corporation, Philadelphia, Pa.

Filed Sep. 12, 1984, Ser. No. 649,466

Int. Cl.[4] **C07D** *277/68, 263/58;* **A61K** *31/42, 13/425*

U.S. Cl. 514—367 **14 Claims**

1. A chemical compound of the formula:



in which:

X is —S—or —O—;

R^1 and R^2 are, each, hydrogen, C_{1-6}-alkyl, allyl, benzyl, phenethyl, methoxyphenethyl or hydroxyphenethyl; and

R^3 and R^4 are, each, hydroxy, hydrogen, halo, C_{1-3}-alkyl or C_{1-3}-alkoxy, a pharmaceutically acceptable, acid addition salt thereof or an O-C_{2-6} -alkanoyl derivative thereof.

4,554,285

FUNGICIDAL ALPHA-AZOLYLGLYCOLS

Bernd Zeeh; Eberhard Ammermann; Ernst Buschmann, all of Ludwigshafen, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

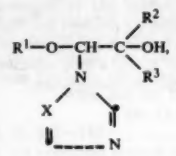
Filed Dec. 13, 1982, Ser. No. 449,316

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 3150204

Int. Cl.[4] **A01N** *43/50, 43/64;* **C07D** *233/60, 249/08*

U.S. Cl. 514—383 **2 Claims**

1. An alpha-azolylglycol of the formula



(I)

where R^1 is n-butyl, R^2 is 2,4-dichlorophenyl, R^3 is methyl and X is N and is the compound 1-(1,2,4-triazol-1-yl-1-n-butyloxy-2-(2,4-dichlorophenyl)-propan-2-ol, or a plant-tolerated salt or metal complex thereof.

2. A process for combating fungi, wherein a fungicidally effective amount of the compound 1-(1,2,4-triazol-1-yl)-1-n-butyloxy-2-(2,4-dichlorophenyl)-propan-2-ol, or a plant-tolerated salt or metal complex thereof, is allowed to act on areas, plants or seed threatened by fungus attack, or on the fungi themselves.

4,554,286

ANTIFUNGAL 1-TRIAZOLYL-2-ARYL-3-(5-TRIFLUOROMETHYLIMIDAZOL-1-YL)PROPAN-2-OL DERIVATIVES

Kenneth Richardson, and Peter J. Whittle, both of Canterbury, England, assignors to Pfizer Inc., New York, N.Y.

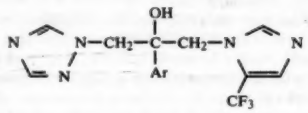
Filed May 3, 1984, Ser. No. 606,510

Claims priority, application United Kingdom, May 13, 1983, 8313235

Int. Cl.⁴ A01N *43/64;* **A61K** *31/44;* **C07D** *401/14, 403/06*

U.S. Cl. 514—383 **13 Claims**

1. A compound of the formula



(I)

and its O–C_1–C_6 alkyl, (C_2–C_4 alkenyl)methyl, (C_2–C_4 alkynyl)methyl, phenyl and benzyl ethers and O–C_2–C_4 alkanoyl and benzoyl esters, where Ar is 5-chloropyrid-2-yl or phenyl optionally substituted by 1 to 2 substituents each independently selected from F, Cl or trifluoromethyl; and pharmaceutically acceptable salts thereof.

10. A method of treating a fungal infection in a mammal which comprises treating said mammal with an antifungally effective amount of a compound according to claim 1, or a pharmaceutically acceptable salt thereof.

13. A method of treating a plant or seed having a fungal infection, which comprises treating said plant or seed, or the locus of said plant, with an antifungally effective amount of a compound according to claim 1, or with an agriculturally acceptable salt thereof.

4,554,287

ANTIHYPERTENSIVE 7-[2-(DIALKYLAMINO)ETHYL]-4-HYDROXY-1,3-BENZIMIDAZOL-2-ONES

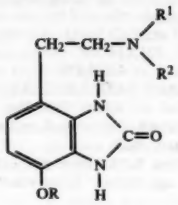
Orum D. Stringer, Philadelphia, and Joseph Weinstock, Phoenixville, both of Pa., assignors to Smithkline Beckman Corporation, Philadelphia, Pa.

Filed Sep. 12, 1984, Ser. No. 649,465

Int. Cl.⁴ A61K *31/415;* **C07D** *235/26*

U.S. Cl. 514—387 **10 Claims**

1. A chemical compound of the formula:



in which:

R is hydrogen or methyl; and

R^1 and R^2 are, each, C_{1-6}-alkyl, benzyl, phenethyl, methoxyphenethyl or hydroxyphenethyl, or a pharmaceutically acceptable, acid addition salt thereof.

9. The method of inducing D_2-agonistic activity in a patient in need thereof comprising administering internally to said patient a D_2-agonistic, nontoxic quantity of a compound of claim 1.

4,554,288

USE OF BENDAZAC AND ITS SALTS IN THE TREATMENT OF RETINITIS PIGMENTOSA

Bruno Silvestrini, Rome, Italy, assignor to Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A., Rome, Italy

Filed Apr. 6, 1984, Ser. No. 597,504

Claims priority, application Italy, Apr. 18, 1983, 20649 A/83

Int. Cl.⁴ A61K *31/40*

U.S. Cl. 514—418 **10 Claims**

1. A method for the treatment of *retinitis pigmentosa* in a human which comprises administering to said human a therapeutically effective amount of bendazac.

4,554,289

OF4949

Susumu Sano; Katsushige Ikai, both of Muko; Hiroyuki Kuroda, Shiga; Teruya Nakamura, Kusatsu; Hiroshi Enomoto, Nagaokakyo, and Yoji Ezure, Otsu, all of Japan, assignors to Takara Sauzo Co., Ltd. and Nippon Shinyaku Co., Ltd., both of, Japan

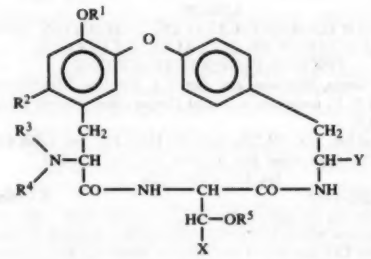
Filed Dec. 23, 1983, Ser. No. 564,923

Claims priority, application Japan, Dec. 25, 1982, 57-234640; Nov. 2, 1983, 58-206169; Nov. 11, 1983, 58-212926

Int. Cl.⁴ A61K *31/395;* **C07D** *273/08;* **C12P** *17/14*

U.S. Cl. 514—450 **21 Claims**

1. A compound of the formula (I):



(I)

or a pharmaceutically acceptable salt thereof wherein R^1 is hydrogen, alkyl of 1 to 10 carbon atoms or acyl of 1 to 6 carbon atoms; R^2 is hydrogen or halo; R^3 is hydrogen, alkyl of 1 to 6 carbon atoms or acyl of 1 to 6 carbon atoms; R^4 is hydrogen or alkyl of 1 to 6 carbon atoms; R^5 is hydrogen or acyl of 1 to 6 carbon atoms; X is $CONH_2$, hydroxyalkyl of 1 to 4 carbon atoms or $COOR^6$ wherein R^6 is hydrogen or alkyl of 1 to 4

carbon atoms; and Y is $CONH_2$, hydroxyalkyl of 1 to 4 carbon atoms or $COOR^7$ wherein R^7 is hydrogen, alkyl of 1 to 10 carbon atoms or benzyl.

4,554,290

OXAMIC ACID DERIVATIVES

Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, and Jozef Drabek, Oberwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

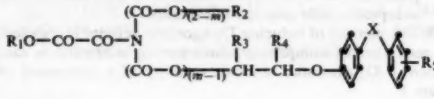
Filed Jun. 7, 1984, Ser. No. 618,155

Claims priority, application Switzerland, Jun. 17, 1983, 3332/83

Int. Cl.[4] C07C *125/065;* A01N *47/10*

U.S. Cl. 514—487 **11 Claims**

1. A compound of the formula



wherein

R_1 is C_1–C_{10}-alkyl,

R_2 is C_1–C_4-alkyl,

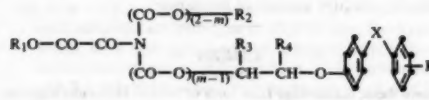
R_3 and R_4 are each hydrogen or methyl,

R_5 is hydrogen, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy C_1–C_4-alkylthio or C_1–C_4-haloalkyl,

X is oxygen or sulfur, and

m is 1 or 2.

8. An arthropodicidal composition containing an arthropodicidally effective amount of a compound of the formula



wherein

R_1 is C_1–C_{10}-alkyl,

R_2 is C_1–C_4-alkyl,

R_3 and R_4 are each hydrogen or methyl,

R_5 is hydrogen, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkyl,

X is oxygen or sulfur, and

m is 1 or 2,

together with a suiable carrier.

4,554,291

IRON/SILICON-BASED CATALYST EXHIBITING HIGH SELECTIVITY TO C_2-C_6 ALKENES IN CO/H_2 FISCHER-TROPSCH REACTIONS

Arunava Gupta, Madison, and James T. Yardley, Morristown, both of N.J., assignors to Allied Corporation, Morris Township, N.J.

Division of Ser. No. 494,754, May 16, 1983, Pat. No. 4,468,474. This application Jun. 1, 1984, Ser. No. 616,099

Int. Cl.[4] C07C *1/04*

U.S. Cl. 518—700 **6 Claims**

1. A process for conversion of CO/H_2 into low molecular weight olefins which comprises contacting a gaseous mixture comprising CO and H_2 in the ratio of about 3:1 to 1:5 (v/v) with an effective amount of a finely divided, hydrogen-activated catalyst composition comprising about 5–15 atom percent Fe, about 65–68 atom percent Si, and about 2–30 atom percent C in a reaction zone at a temperature in the range of about 150° C. to about 450° C. and a pressure in the range of about 10 to about 2000 kPa for a time sufficient to produce a reaction mixture comprising C_2–C_6 alkenes, said hydrogen-activated catalyst having been prepared by a process which comprises contacting effective amounts, in the gaseous phase, of a silicon compound, a hydrocarbon and an organo-iron compound under conditions to produce a product and thereafter contacting the product with H_2 gas at a temperature between about 450° C. and about 550° C. for a time sufficient to produce the hydrogen activated catalyst composition.

4,554,292

PROCESS FOR THE PRODUCTION OF HYDROCARBONS

Jean C. Lambert; Guy Barré; Pierre Dejaifve, and Gérard Bidan, all of Grand-Couronne, France, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 6, 1985, Ser. No. 708,831

Claims priority, application France, Mar. 22, 1984, 84 04455

Int. Cl.[4] C07L *1/04*

U.S. Cl. 518—728 **9 Claims**

1. A process for the production of hydrocarbons from synthesis gas, which process comprises contacting the synthesis gas at elevated pressure and temperature with a catalyst comprising thorium oxide and zinc oxide promoted with at least one alkali metal compound.

4,554,293

LIGHTLY CROSSLINKED LINEAR OLEFINIC POLYMER FOAM BLENDS AND PROCESS FOR MAKING

Chung P. Park, Pickerington, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 19, 1985, Ser. No. 725,036

Int. Cl.[4] C08J *9/14*

U.S. Cl. 521—81 **5 Claims**

1. A process for the preparation of a polymeric foam comprising the steps of:

(a) melt processing a blend of a linear olefin polymer and a crosslinkable polymer having one or more carboxylic acid, amide, amine, or hydroxyl functional groups, together with a volatile blowing agent and a sufficient amount of a crosslinking agent selected from the group consisting of epoxy-functional silanes, amino-functional silanes, organofunctional alkoxy silanes, multiepoxyfunctional silanes, amines, and titanates, to form a flowable admixture; and

(b) extruding said admixture through a die to a zone of lower pressure and activating said blowing agent to expand the polymer blend to a cellular crosslinked structure.

4,554,294

NITRO UREA BASED BLOWING AGENTS

Byron A. Hunter, Alpine, Utah; Donald G. Rowland, and Warren J. Peascoe, both of Woodbridge, Conn., assignors to Uniroyal, Inc., Middlebury, Conn.

Filed Dec. 5, 1984, Ser. No. 678,311

Int. Cl.[4] C08J *9/10*

U.S. Cl. 521—93 **2 Claims**

1. A gas expandable composition comprising a gas expandable polymer and an effective amount of the blowing agent composition selected from the group consisting of the zinc salt of nitro-urea and a mixture of azodicarbonamide and the zinc salt of nitro-urea.

4,554,295

METHOD FOR PREPARING FLEXIBLE POLYURETHANE FOAMS FROM POLYMER/POLYOLS AND IMPROVED POLYURETHANE FOAM PRODUCT

Charles A. Ridge, Jr., Cookeville, Tenn., assignor to Eastern Foam Products, Inc., Cookeville, Tenn.

Filed Jul. 13, 1983, Ser. No. 513,431
Int. Cl.[4] C08G *18/14*
U.S. Cl. 521—110 23 Claims

1. An improved process for preparing flexible polyurethane foams by the one-shot technique comprising co-reacting a fluid high-solids polymer/polyol and an organic polyisocyanate in the presence of an organo-tin catalyst, a tertiary amine catalyst, a blowing agent, a silicone-oxyalkylene surfactant and an amount of a filled diorganosilicone oil anti-foaming agent necessary to produce a predominately closed cell foam having an improved loas bearing resiliency.

4,554,296

POLYORGANOSILOXANE COMPOSITIONS

Joseph W. Keil, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Oct. 26, 1984, Ser. No. 664,898
Int. Cl.[4] C08G *77/00*
U.S. Cl. 521—154 35 Claims

1. A polyorganosiloxane comprising $[F(CF_2)_m(CH_2)_nO]Si-O_{(4-p)/2}$, $R_3SiO_{1/2}$ and $SiO_{4/2}$ units, silicon-bonded hydroxyl groups, and from 0 to 10 percent, based on the weight of said polyorganosiloxane, of $GSiO_{3/2}$ units, where R represents a monovalent hydrocarbon radical containing from 1 to 20 carbon atoms, m is an integer having an average value of from 1 to 20, inclusive, n is 1 or 2, p is an integer from 1 to 3, inclusive, and G represents the residue obtained by removing the hydrogen atom from a hydroxyl group of a linear organic polymer selected from the group consisting of homopolymers of ethylenically unsaturated alcohols, copolymers of these alcohols with ethylenically unsaturated hydrocarbons, polyethers and polyoxyalkylene glycols, wherein said organic polymer contains an average of at least one terminal hydroxyl group per molecule.

4,554,297

RESILIENT CELLULAR POLYMERS FROM AMINE TERMINATED POLY(OXYALKYLENE) AND POLYFUNCTIONAL EPOXIDES

Shmuel Dabi, Highland Park, N.J., assignor to Personal Products Company, Milltown, N.J.

Filed Apr. 18, 1983, Ser. No. 485,782
Int. Cl.[4] C08J *9/08*
U.S. Cl. 521—178 18 Claims

1. A product for absorbing body fluids comprising as an absorbent element therein, a cellular hydrophilic polymeric material, said polymeric material comprising the reaction product of at least one epoxy resin and amine terminated poly(alkylene oxide) selected from the group consisting of amine terminated poly(propylene oxide), amine terminated poly(ethylene oxide), amine terminated copolymers of ethylene oxide and propylene oxide, and mixtures thereof wherein the ratio of ethylene oxide groups to propylene oxide groups in the reaction mixture ranges from about 1 to about 15.

4,554,298

WATER SOLUBLE POLYMERS

David Farrar, Bradford, and Malcolm Hawe, Huddersfield, both of England, assignors to Allied Colloids Limited, England

Continuation-in-part of Ser. No. 612,185, May 21, 1984, Pat. No. 4,503,172. This application Nov. 16, 1984, Ser. No. 672,312
Claims priority, application United Kingdom, May 20, 1983, 8313976; Aug. 12, 1983, 8321731
The portion of the term of this patent subsequent to Mar. 5, 2002, has been disclaimed.
Int. Cl.[4] C08F *6/04, 6/10*
U.S. Cl. 523—336 18 Claims

1. A process in which a solution is formed of a water soluble polymer containing acid groups in a blend of a polar solvent, water and base in an amount sufficient to neutralise at least 10% but not more than 90% molar of the said acid groups and in which the solvent, the base and the amount of at least one of the base and the solvent are selected to cause phase separation of the solution into an aqueous phase containing a higher molecular weight fraction and an organic phase containing a lower molecular weight fraction.

4,554,299

CONTROLLING THE RATE OF DIAMINE CURING AGENTS IN POLYURETHANE CEMENTS

Paul E. Liggett, Wooster, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Apr. 12, 1985, Ser. No. 722,629
Int. Cl.[4] C08L *75/06*
U.S. Cl. 523—466 14 Claims

1. A process for preparing a urethane formulation comprising the steps of:

separately preparing a polymer component, said polymer component comprising a urethane prepolymer and a urethane solvent;

the amount of said urethane prepolymer in said urethane component is about 100 parts by weight, wherein said urethane prepolymer is the reaction product (1) an aliphatic polyisocyanate having from 5 to 25 atoms, and (2) a mixed polyester, said mixed polyester being (a) a copolymerization condensation product of, or (b) a separate physical blend of an aliphatic dicarboxylic acid having from 2 to 12 carbon atoms and an aromatic dicarboxylic acid having from 8 to 12 carbon atoms with a polyol having a molecular weight of 500 or less, the amount of said aliphatic dicarboxylic acid ranging from about 90 percent to about 10 percent by weight, this molecular weight of said polyester made from said acid and said polyol ranging from about 500 to about 4,000, and wherein the equivalent ratio of said isocyanate to the OH end groups in said polyester ranges from about 1.5 to about 3.0;

separately preparing a curing component, said curing component consisting essentially of a mixture of an aromatic diamine, the ketimine of an aliphatic diamine and a curing agent solvent, the equivalent ratio of said curing agent to said isocyanate being from about 0.8 to about 1.2;

separately preparing a cement component, said cement component comprising about 3 to about 7 parts by weight per 100 parts by weight of said urethane prepolymer of an epoxy having leaching resistance and a solvent;

a thixotropic compound, said thixotropic compound located in said cement component, the amount of said thixotropic agent being from about 2 parts by weight to about 8 parts by weight per 100 parts by weight of said urethane prepolymer;

maintaining said cement component separate from said polymer component and said curing agent, and maintaining said polymer component separate from said curing component, thereby maintaining stability of each of said components;

the total amount of solids in said overall formulation ranging from about 20 percent to about 50 percent by weight

based upon the total amount of said solvents and said solvents in said overall formulation.

4,554,300

REDUCING THE SPEED OF ALIPHATIC DIAMINE CURING AGENTS IN POLYURETHANE CEMENTS

Paul E. Liggett, Wooster, and Daniel A. Chung, North Canton, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Apr. 12, 1985, Ser. No. 722,630
Int. Cl.[4] C08L *75/06*
U.S. Cl. 523—466 **12 Claims**

1. A process for preparing a urethane formulation, comprising the steps of:

separately preparing a polymer component, said polymer component comprising a urethane prepolymer and a urethane solvent;

the amount of said urethane prepolymer in said urethane component is about 100 parts by weight, wherein said urethane prepolymer is the reaction product of (1) an aliphatic polyisocyanate having from 5 to 25 carbon atoms, and (2) a mixed polyester, said mixed polyester being (a) a copolymerization condensation product of, or (b) a separate physical blend of, an aliphatic dicarboxylic acid having from 2 to 12 carbon atoms and an aromatic dicarboxylic acid having from 8 to 12 carbon atoms, with a polyol having a molecular weight of 500 or less, the amount of said aliphatic dicarboxylic acid ranging from about 90 percent to about 10 percent by weight, the molecular weight of said polyester made from said acid and said polyol ranging from about 500 to about 4,000, and wherein the equivalent ratio of said isocyanate to the OH end groups in said polyester ranges from about 1.5 to about 3.0;

separately preparing a curing component, said curing component consisting essentially of the ketimine derivative of an aliphatic diamine as curing agent and a curing agent solvent, the equivalent ratio of said curing agent ot said isocyanate being from about 0.8 to about 1.2;

separately preparing a cement component, said cement component comprising about 3 to about 7 parts by weight per 100 parts by weight of said urethane prepolymer, of an epoxy having solvent leaching resistance, and a solvent;

a thixotropic agent, said thixotropic agent located in said cement component, the amount of said thixotropic agent being from about 2 parts by weight to about 8 parts by weight per 100 parts by weight of said urethane prepolymer;

maintaining said cement component separate from said polymer component and said curing agent, and maintaining said polymer component separate from said curing component thereby maintaining stability of each of said components;

the total amount of solids in said overall formulation ranging from about 20 percent to about 60 percent by weight based upon the total amount of said solvents and said solvents in said overall formulation.

4,554,301

MODIFIED TWO-PART TYPE ADHESIVE COMPOSITION

Hidemi Dohi, and Hideaki Matsuda, both of Kagawa, Japan, assignors to Okura Kogyo Kabushiki Kaisha, Japan

Filed Mar. 19, 1984, Ser. No. 591,261
Claims priority, application Japan, Mar. 22, 1983, 58-45945
Int. Cl.[4] C08K *5/20*
U.S. Cl. 524—210 **13 Claims**

1. A modified two-part type adhesive composition, which comprises liquid I comprising an acrylic monomer, an organic peroxide, and a gelation stabilizer and liquid II comprising of an acrylic monomer, a curing accelerator, and a gelation stabilizer, at least one of said liquids containing a modified nitrile rubber in an amount of 2 to 50% by weight; said modified nitrile rubber containing carboxyl groups prior to being modified, said modified nitrile rubber having after modification:

(1) a portion of said carboxyl groups addition condensed with a diisocyanate and a (meth)acrylic group-containing acid phosphate, whereby said (meth)acrylic group-containing acid phosphate is covalently bonded to said modified nitrile rubber, and

(2) remaining carboxyl groups neutralized with a neutralizing agent selected from the group consisting of a divalent metal compound and a polyamine in the presence of a (meth)acrylic group-containing acid phosphate, whereby said (meth)acrylic group-containing acid phosphate is ionically bonded to said modified nitrile rubber.

4,554,302

AROMATIC POLYCARBONATE CONTAINING N,N-DIALKYL AMIDE MOLD RELEASE AGENT

Kenneth F. Miller, Mt. Vernon, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Jan. 2, 1985, Ser. No. 688,245
Int. Cl.[4] C08L *69/00*
U.S. Cl. 524—233 **6 Claims**

1. A composition comprising an aromatic carbonate polymer in admixture with a mold release effective amount of a compound of the formula

$$R_1\overset{\overset{O}{\|}}{C}NR_2R_3$$

wherein R_1, R_2 and R_3 are the same or different and are alkyl of one to twenty-five carbon atoms, inclusive with the proviso that the amide is essentially nonvolatizable under polymer processing conditions.

4,554,303

COPOLYESTER COMPOSITIONS

Frederick D. Petke, Kingsport; Charles W. Ramsey, Blountville, and Richard L. McConnell, Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 14, 1984, Ser. No. 681,452
Int. Cl.[4] C08L *91/06, 91/08*
U.S. Cl. 524—277 **9 Claims**

1. Composition comprising

(a) a copolyester derived from 100 mole % of a dibasic acid component comprising about 40–100 mol % terephthalic acid and 100 mol % of a glycol component comprising about 40–100 mol % ethylene glycol, 1,4-butanediol or 1,6-hexanediol, wherein about 20–120 mol %, based on 200 mol % polymer, is derived from about

(1) 0 to about 60 mol % of a second acid selected from the group consisting of isophthalic acid, dimer acid and aliphatic dicarboxylic acids having 3–12 carbon atoms,

(2) 0 to about 60 mole % of a second glycol having 2–10 carbon atoms, or

(3) about 20–120 mole % of a combination of said second acid and second glycol,

said copolyester characterized by having a melting temperature of about 80°–190° C. and a ΔH_f of less than about 6 cal/gm, and

(b) about 0.02 to about 2 wt % of at least one natural or synthetic wax with said natural wax being animal, vegetable, or mineral waxes with melting points in the range of about 40° to about 90° C. and melt viscosities in the range of about 5 to about 100 cp at 125° C.; said synthetic waxes being based on polyethylene, polypropylene, poly-1-butene, ethylene or propylene copolymers with each other, or with α-olefins containing 3–6 carbon atoms, or Fischer Tropsch waxes, with melting points in the range of about 95° C. to 160° C., densities of about 0.90 to about 0.965 and melt viscosities ranging from about 5 cp. to about 30,000 cp. at 190° C.

4,554,304

HOT MELT BUTYLENE/ETHYLENE ADHESIVES

David R. Hansen, and William H. Korcz, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 31, 1984, Ser. No. 615,850

Int. Cl.[4] C08K 5/13; C08L 51/06, 53/02, 71/08

U.S. Cl. 524—291 4 Claims

1. A hot melt adhesive with long open time comprising a blend of:

from about 15% by weight to about 85% by weight of a maleic anhydride functionalized copolymer of butene-1 and ethylene, where the ethylene content is from about 5.5% by weight to about 10.0% by weight of said copolymer; and where said copolymer contains from about 0.05% by weight to about 5% by weight grafted maleic anhydride;

from about 20% by weight to about 60% by weight of an aliphatic, substantially non-polar resin selected from the group consisting of C_5 stream resins, polyterpenes and partially hydrogenated C_9 hydrocarbon resins with softening points in a range of 70° C. to 125° C.;

from about 0.1% by weight to about 0.5% by weight of a hindered phenolic antioxidant;

from about 0% by weight to about 20% by weight of a microcrystalline wax;

optionally, from about 0% by weight to about 35% by weight of a block copolymer which comprises at least one monalkenyl arene polymer end block and at least one substantially complete hydrogenated conjugated diene second block sufficient to give said blend flexibility and strength desired; and

optionally, from about 0% by weight to about 40% by weight of atactic polypropylene sufficient to yield a good T-peel lower limit value.

4,554,305

HYDROGEN PEROXIDE-FREE AND HYDROFLUORIC ACID-FREE AUTODEPOSITION BATHS

Wilbur S. Hall, Springvale, Me., assignor to Amchem Products, Inc., Ambler, Pa.

Filed Mar. 28, 1985, Ser. No. 717,047

Int. Cl.[4] C08K 3/16

U.S. Cl. 524—321 24 Claims

1. An aqueous acidic autodeposition composition for depositing a resinous coating on an iron- and/or zinc-containing metal substrate, comprising a resinous latex, an acid, and an oxidizer, all present in amounts effective to deposit said coating, wherein: said latex polymer is a copolymer; said acid is at least one of acetic, acrylic, adipic, chloroacetic, citric, dichloroacetic, diglycolic, fumaric, gallic, itaconic, lactic, malic, malonic, succinic, or tartaric and said oxidizer is elemental iodine complexed with a water soluble iodide, an iodate salt or free acid, a periodate salt or free acid, or any mixture of the foregoing.

4,554,306

POLYMER-MODIFIED POLYOLS

William G. Carroll, Vossem, Belgium, assignor to Imperial Chemical Industries PLC, London, England

Filed Jun. 7, 1984, Ser. No. 618,347

Claims priority, application United Kingdom, Jun. 27, 1983, 8317354

Int. Cl.[4] C08G 83/00; C08K 5/06; C08L 75/08, 75/12

U.S. Cl. 524—377 8 Claims

1. A polymer-modified polyol comprising a dispersion in a polyol having a molecular weight of at least 1000, of from 1 to 80% by weight based on said polymerpolyol of the in-situ reaction product of an organic polyisocyanate and a compound having a molecular weight of up to 600 and containing at least one hydroxyl group, in an NCO:OH ratio of from 0.33:1 to 1.5:1, said reaction product being obtained in a reaction between said organic polyisocyanate and said compound in the presence of from 0.5 to 5% of a dispersant which is the product obtained by reacting

(1) a copolymer comprising units derived from the following ethylenically unsaturated monomers in the stated proportions by weight based on the total weight of the copolymer:

(a) 0–50% of a hydroxy group-containing monomer,

(b) 0–20% of a carboxamide group-containing monomer, provided that there is always present at least 5% of (a) or at least 5% of (b);

(c) 20–80% of an alkene, alkyl acrylate or alkyl methacrylate free from carboxyl groups and containing a straight or branched chain alkyl group of from 7 to 22 carbon atoms, and

(d) 0–50% of one or more monomers free from the hydroxy, carboxamide and C_{7-22} groups present in (a), (b) or (c), and also, as an essential constituent,

(e) up to 20% of a monomer containing an epoxide group, the total of monomers (a), (b), (c), (d) and (e) being 100%, with

(2) a compound of structure $Ar—(CH{=}CH)_n—CO_2H$ where Ar is an aromatic group and n is 1 or 0, in the presence of a tertiary amine.

2. A polymer-modified polyol according to claim 1 in which the polyol is a polyether polyol and the compound having a molecular weight of up to 600 is an olamine.

3. A polymer-modified polyol according to claim 1 in which the polyol is a polyether polyol and the compound having a molecular weight of up to 600 is a polyethylene glycol.

4,554,307

WATER SOLUBLE POLYMERS AND DISPERSIONS CONTAINING THEM

David Farrar, and Malcolm Hawe, both of West Yorkshire, England, assignors to Allied Colloids Limited, England

Continuation-in-part of Ser. No. 612,516, May 21, 1984, Pat. No. 4,507,422. This application Nov. 16, 1984, Ser. No. 672,308

Claims priority, application United Kingdom, May 20, 1983, 8313976; Aug. 12, 1983, 8321731

The portion of the term of this patent subsequent to Mar. 26, 2002, has been disclaimed.

Int. Cl.[4] C09D 3/74, 3/80

U.S. Cl. 524—425 12 Claims

1. A water soluble polymer formed from one or more unsaturated monomers and containing acid groups selected from carboxylic, sulphuric and sulphonic acid groups, or a water soluble salt thereof, and which has PD below 1.4 and Mw, measured on the full sodium salt, of from 1,000 to 50,000.

4,554,308

CROSSLINKED POLYURETHANE DISPERSIONS

Andrea Russiello, Kelton, Pa., assignor to Wilmington Chemical Corporation, Wilmington, Del.

Filed Oct. 2, 1978, Ser. No. 947,544

Int. Cl.[4] C08L 75/04

U.S. Cl. 524—591 25 Claims

1. A stable aqueous polyurethane ionic dispersion comprised of crosslinked polyurethane polymer particles dispersed by the incorporation of a polyfunctional active hydrogen compound having a solubilizing group therein incorporated into the polymer chain, said crosslinked particles being crosslinked beyond the point of gelation and being capable of coalescing to form a continuous film upon drying of the dispersion at a temperature of 65° to 75° F. and atmospheric pressure.

4,554,309

POLYCARBONATE FROM CYCLOALKYLIDENE TETRA ALKYL SUBSTITUTED DIPHENOL

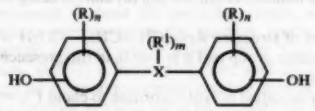
Victor Mark, Evansville, and Charles V. Hedges, Mt. Vernon, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Continuation-in-part of Ser. No. 453,105, Dec. 27, 1982, abandoned. This application Jun. 14, 1984, Ser. No. 620,712
Int. Cl.[4] C08G 63/62
U.S. Cl. 524—611 50 Claims

1. Thermoplastic polymeric composition exhibiting improved heat resistance comprised of (i) at least one thermoplastic high molecular weight carbonate polymer comprised of the reaction products of:

(a) a carbonate precursor; and

(b) at least one dihydric phenol represented by the general formula



wherein

R is independently selected from alkyl radicals,

each n is two,

R^1 is independently selected from monovalent hydrocarbon radicals,

X represents a cycloalkylidene radical containing from 10 to about 16 ring carbon atoms, and

m represents a whole number having a value of from 0 up to the number of replaceable hydrogen atoms present on X.

4,554,310

ROOM TEMPERATURE VULCANIZABLE ORGANOPOLYSILOXANE COMPOSITIONS AND METHOD FOR MAKING

Jeffrey H. Wengrovius, Scotia, and Leonard W. Niedrach, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 27, 1984, Ser. No. 644,892
Int. Cl.[4] C08K 5/23
U.S. Cl. 524—715 12 Claims

1. Room temperature vulcanizable organopolysiloxane compositions comprising by weight,

(A) 100 parts of organopolysiloxane consisting essentially of chemically combined diorganosiloxy units and terminated with polyalkoxysiloxy units,

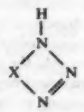
(B) up to 10 parts of a polyalkoxysilane,

(C) up to 5 parts of amine accelerator selected from the class consisting of primary amines, secondary amines and silylated secondary amines,

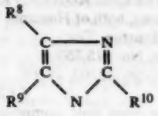
(D) an effective amount of a tin condensation catalyst of the formula,

$(R)_2Sn[Y']$, and

(E) 0.001 to 5 parts of a copper corrosion inhibitor selected from the class consisting of organic triazoles having the formula,



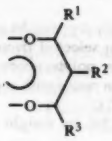
imidazoles having the formula,



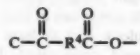
and mercaptoarylthiazoles,

where R is selected from $C_{(1-18)}$ monovalent hydrocarbon radicals and substituted $C_{(1-18)}$ monovalent hydrocarbon radicals, and Y' is a divalent radical selected from

(i) a chelate group having the formula



(ii) and a dicarboxylate group having the formula,



R^1, R^2 and R^3 are the same or different monovalent radials selected from the class consisting of hydrogen, R, $—Si(R)_3$, acyl and nitrile, R^4 is selected from divalent $C_{(1-18)}$ hydrocarbon radicals and substituted divalent $C_{(1-18)}$ hydrocarbon radicals, R^8, R^9 and R^{10} are monovalent radicals selected from hydrogen and $C_{(1-18)}$ monovalent hydrocarbon radicals and substituted $C_{(1-18)}$ monovalent hydrocarbon radicals and X is a C_1–C_{50} divalent organic radical.

4,554,311

METHOD OF PREPARING AN AQUEOUS SOLUTION COMPRISING VINYLPYRROLIDONE/VINYL ACETATE COPOLYMERS OF VARIOUS MOLECULAR WEIGHTS USING A SINGLE INITIATOR SYSTEM CONSISTING ESSENTIALLY OF T-BUTYLPEROXYPIVALATE

Eugene S. Barabas, Watchung, N.J., and James R. Cho, Oakland, both of N.J., assignors to GAF Corporation, Wayne, N.J.

Division of Ser. No. 419,869, Sep. 20, 1982, Pat. No. 4,520,179. This application Feb. 11, 1985, Ser. No. 699,982
Int. Cl.[4] C08F 126/08; C08L 39/06
U.S. Cl. 524—808 1 Claim

1. Process for preparing an aqueous solution of vinylpyrrolidone/vinyl acetate copolymer which comprises:

(a) polymerizing a monomer mixture consisting essentially of N-vinylpyrrolidone and vinyl acetate monomers in a reaction zone in the presence of free radical initiator consisting essentially of t-Butylperoxypivalate and solvent consisting essentially of water or a mixture of water with isopropyl alcohol or sec. butyl alcohol or both to form vinylpyrrolidone/vinyl acetate copolymer; and

(b) removing product from the reaction zone in the form of an aqueous solution containing between about 20 and about 60 wt. % vinylpyrrolidone/vinyl acetate copolymer.

4,554,312

METHOD OF PREPARING AQUEOUS SOLUTIONS OF POLYVINYL-PYRROLIDONE HOMOPOLYMER OF VARIOUS MOLECULAR WEIGHTS USING A SINGLE INITIATOR SYSTEM CONSISTING ESSENTIALLY OF T-BUTYLPEROXYPIVALATE

Eugene S. Barabas, Watchung, and James R. Cho, Oakland, both of N.J., assignors to GAF Corporation, Wayne, N.J.

Division of Ser. No. 419,870, Sep. 20, 1982, Pat. No. 4,520,180.
This application Feb. 11, 1985, Ser. No. 699,983
Int. Cl.[4] C08F *126/08;* C08L *39/06*
U.S. Cl. 524—808 1 Claim

1. Process for making an aqueous solution of polyvinylpyrrolidone homopolymer which comprises:

(a) polymerizing N-vinylpyrrolidone monomer in a reaction zone in the presence of free radical initiator consisting essentially of t-Butylperoxypivalate and solvent consisting essentially of water or a mixture of water with isopropyl alcohol or sec. butyl alcohol or both, and

(b) removing product from the reaction zone in the form of an aqueous solution containing between about 20 and about 60 wt. % polyvinylpyrrolidone.

4,554,313

PROCESS FOR PREPARING BITUMEN-POLYMER COMPOSITIONS, APPLICATION OF THESE COMPOSITIONS OF THE OBTENTION OF COVERINGS AND MOTHER SOLUTION OF POLYMER USABLE FOR THE OBTENTION OF THE SAID COMPOSITIONS

Germain Hagenbach, Vernaison; Paul Maldonado, St Symphorien d'Ozon, and Jacques Maurice, Pau, all of France, assignors to Societe Anonyme dite: Elf France, Paris, France

Filed Jun. 9, 1983, Ser. No. 502,827
Claims priority, application France, Jun. 10, 1982, 82 10095
Int. Cl.[4] C08F *8/00*
U.S. Cl. 525—54.5 40 Claims

1. A process for the preparation of a bitumen-polymer composition which comprises:

(a) forming a mixture of a bitumen, from about 0.5 to 15% by weight of the bitumen of a styrene-conjugated diene copolymer and from about 0.005 to 15% by weight of the bitumen of a polysulfide of the formula:

$$R_1—(S)_m(R—(S)_m)_xR_2$$

wherein R_1 and R_2 are each independently a C_1 to C_{20} saturated monovalent hydrocarbon radical or a C_1 to C_{20} unsaturated monovalent hydrocarbon radical, or R_1 and R_2 can be linked to form a C_1 to C_{20} saturated divalent hydrocarbon radical or a C_1 to C_{20} unsaturated divalent hydrocarbon radical; R is a C_1 to C_{20} saturated divalent hydrocarbon radical or a C_1 to C_{20} unsaturated divalent hydrocarbon radical; $(S)_m$ is a divalent group of m sulfur atoms wherein m can be different for each group and represents a whole number of from 1 to about 6 with at least m in one group being at least 2; and x is a whole number ranging from 0 to 10; and

(b) heating the mixture at a temperature of from about 130° C. to about 230° C. for at least 15 minutes to form the bitumen-polymer composition.

4,554,314

THERMOPLASTIC MOLDING COMPOSITIONS

James Y. J. Chung, Wexford; Dieter Neuray, and Mark W. Witman, both of Pittsburgh, all of Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

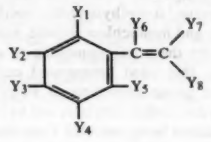
Continuation-in-part of Ser. No. 494,826, May 16, 1983, abandoned. This application Nov. 19, 1984, Ser. No. 673,057
Int. Cl.[4] C08L *67/02*
U.S. Cl. 525—67 3 Claims

1. A thermoplastic molding composition comprising:

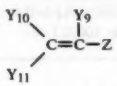
(i) a polyethylene terephthalate resin characterized in that its intrinsic viscosity as measured in a 1% solution of phenol and tetrachloroethane (60:40) at 25° C. is at least 0.4 deciliters per gram,

(ii) an aromatic polycarbonate resin, and about 5 to 25% relative to the total weight of said (i), (ii) and (iii) of

(iii) a graft elastomer having a rubbery core to graft phase ratio of 70/30 to 80/20 characterized in that its core consists of polybutadiene and that its graft phase consists of the polymerization product of (a) at least one member selected from the group consisting of monovinyl aromatic hydrocarbons described by the formula



wherein Y_1–Y_8 independently denote a hydrogen, chlorine or bromine atom or a C_1–C_5 alkyl radical and (b) at least one acrylonitrile type compound conforming to



wherein Y_9–Y_{11} independently denote a hydrogen, chlorine or bromine atom or a C_1–C_5 alkyl radical and Z denotes a cyano radical, said (a) relating to said (b) by weight as 74/26 to 66/34, said composition being further characterized in that said (i) relates to said (ii) by weight as 1:1 to 4:1.

4,554,315

THERMOPLASTIC RESINOUS BLEND AND A METHOD FOR ITS PREPARATION

James Y. J. Chung, Wexford, Pa.; Russell P. Carter, Jr., New Martinsville, W. Va., and Dieter Neuray, Pittsburgh, Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Sep. 17, 1984, Ser. No. 651,145
Int. Cl.[4] C08L *69/00*
U.S. Cl. 525—67 10 Claims

1. A thermoplastic molding composition comprising

I. a blend of

(i) about 10–80% of a thermoplastic polyester resin,

(ii) about 15–85% of a polycarbonate resin,

(iii) about 5–30% of a graft polymer which is characterized in that its core is substantially of a conjugated diene or of a C_1–C_{15} acrylate, said core having a glass transition temperature below about 0° C. and which is further characterized in that its grafted phase comprises any of acrylic or methacrylic esters of saturated aliphatic alcohols, vinyl acetate, acrylonitrile, styrene and alkyl styrene and

II. about 0.1 to 15 parts per hundred weight of said blend of a polymer modifier comprising at least one derivative of an olefinically unsaturated monomer carrying at least one epoxide group.

4,554,316

THERMOPLASTIC RESIN COMPOSITION

Hajime Sakano, Osaka; Akitoshi Ito, Mie; Motoichi Yano; Yasuhiro Honda, both of Osaka, and Takayoshi Fujiwara, Hyogo, all of Japan, assignors to Sumitomo Naugatuck Co., Ltd., Osaka, Japan

Filed Nov. 7, 1983, Ser. No. 549,381
Claims priority, application Japan, Nov. 12, 1982, 57-199583
Int. Cl.[4] C08L *51/04, 37/00*
U.S. Cl. 525—71 4 Claims

1. A thermoplastic resin molding composition affording a

delustered shaped article which comprises (A) a rubber-modified copolymer obtained by polymerizing two or three kinds of monomers selected from the group consisting of aromatic vinyl compounds, vinyl cyanides and alkyl unsaturated carboxylates in the presence of at least one of rubbers and (B) an epoxy group-containing olefin polymer comprising units of at least one of unsaturated epoxy compounds and units of at least one of olefins, said monomers consisting of 50 to 80% by weight aromatic vinyl compounds and 50 to 20% by weight vinyl cyanides and/or alkyl unsaturated carboxylates, said aromatic vinyl compounds being selected from the group consisting of styrene, α-methylstyrene, methyl-α-methylstyrene vinyltoluene and monochlorostyrene, said vinyl cyanides being selected from the group consisting of acrylonitrile and methacrylonitrile, said alkyl unsaturated carboxylates being selected from the group consisting of alkyl acrylates, alkyl methacrylates, hydroxyalkyl acrylates and hydroxyalkyl methacrylates, said rubbers being selected from the group consisting of polybutadiene, styrene/butadiene copolymer, acrylonitrile/butadiene copolymer, ethylene/propylene copolymer, ethylene/propylene/non-conjugated diene copolymer, ethylene/vinyl acetate copolymer, chlorinated polyethylene, and polyalkyl acrylate, wherein the weight proportion of the rubber-modified copolymer (A) and the epoxy group-containing olefin polymer (B) is 100:0.1–40.

4,554,317

SYNTHETIC WOUND COVERING

David Behar, 4 Habanai St., Jerusalem 96264, Israel; Arie L. Rajbenbach, 11 Herzog St., Givatayim 53600, Israel; Marta Juszynski, 43/9 Epstein St., Rehovot, Israel, and Nahum Ben-Hur, 8 Bialik St., Jerusalem 96221, Israel

Continuation-in-part of Ser. No. 481,899, Apr. 4, 1983, abandoned. This application Oct. 6, 1983, Ser. No. 539,586

Claims priority, application Israel, Apr. 6, 1982, 65438

Int. Cl.[4] C08G *18/67*; A61L *15/01*

U.S. Cl. 525—28 **21 Claims**

1. A synthetic wound covering comprising a hydrophilic membrane which is a graft polymer formed from a polyester polyurethane substrate having a modulus of elasticity below 1500 PSI and a hydrophilic acrylamide monomer wherein the monomer is present at at least 50% by weight and is substantially uniformly dispersed through the substrate, whereby the graft polymer has a water permeability in the range from 1000 to 8000 $g/m^2/24$ hr and a modulus of elasticity below about 600 PSI when wet.

8. A method for treating a wound, said method employing a wound covering material comprising a graft polymer formed from a polyester polyurethane substrate having a modulus of elasticity below about 1500 PSI and a hydrophilic acrylamide monomer present at at least 50% by weight, said material having a water permeability in the range from 1000 to 8,000 $g/m^2/24$ hr and modulus of elasticity below 600 PSI when wet, said method comprising:

applying the covering material to the wound such that the covering conforms to the surface of the wound.

4,554,318

CYANOETHYLACRYLATE/ACRYLIC ACID COPOLYMER

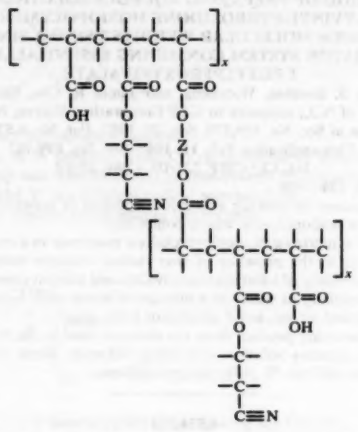
Thomas G. Rukavina, Lower Burrell, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 30, 1984, Ser. No. 615,191

Int. Cl.[4] C08L *63/00*; C08F *8/00*

U.S. Cl. 525—118 **6 Claims**

1. A composition of matter comprising the polymerization reaction product of a cyanoethylacrylate and acrylic acid further reacted with a crosslinking agent to form a crosslinked polymer having the structural formula



wherein Z represents the crosslinking agent and x is ≧1.

4,554,319

PROCESS FOR LOW TEMPERATURE CURABLE COATING COMPOSITION

John F. Heaps, Springfield, and Dennis E. Erickson, Wilbraham, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Jul. 12, 1984, Ser. No. 630,035

Int. Cl.[4] C08L *67/00, 61/32, 29/08*

U.S. Cl. 525—155 **16 Claims**

1. A process for preparing a coating composition which comprises:

(1) forming a solution of an aminoplast selected from the group consisting of alkoxymethyl derivatives of urea, melamine and methyl-, ethyl- and benzoguanamines and a styrene-(meth)allyl alcohol copolymer in a polar solvent; and

(2) admixing the solution with a non-aqueous solution of a hydroxy-containing resin to obtain a uniform solution;

wherein the styrene-(meth)allyl alcohol copolymer has a molecular weight in the range of about 800 to about 2500 and a hydroxy content in the range of about 4.0 to about 10.0 weight percent and wherein the hydroxy-containing resin is selected from the group consisting of acrylic and polyester hydroxyl-containing resins, and has hydroxy content of from about 1.3 weight percent to about 10 weight percent.

4,554,320

NYLON MOLDING MATERIALS HAVING HIGH IMPACT STRENGTH

Horst Reimann, Worms; Walter Ziegler, Edingen-Neckarhausen; Franz Brandstetter, Neustadt; Rainer Theysohn, Frankenthal, and Richard Pflueger, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 498,756, May 27, 1983, abandoned. This application Feb. 13, 1985, Ser. No. 701,449

Claims priority, application Fed. Rep. of Germany, May 29, 1982, 3220380

Int. Cl.[4] C08F *8/30*; C08L *31/00*

U.S. Cl. 525—183 **4 Claims**

1. A nylon molding material which has high impact strength and contains

(A) a thermoplastic nylon having a relative viscosity of from 2.5 to 5, and

(B) from 5 to 65% by weight, based on (A), of a non-crosslinked copolymer which contains three or more compo-

nents and is characterized by a melting range of from 40° to 100° C., a glass transition temperature of below −20° C. and a shear modulus of less than 100 (Nmm^{-2}) at −20° C., less than 50 (Nmm^{-2}) at 0° C. and less than 20 (Nmm^{-2}) at +20° C.; said copolymer comprising:

(a) from 55 to 75% by weight of ethylene,

(b) from 20 to 40% by weight of one or more primary or secondary C_2–C_8-alkyl acrylates or methacrylates and

(c) from 0.5 to 8% by weight of a monomer selected from the group consisting of maleic anhydride, acrylic acid and methacrylic acid,

the sum of components (a)–(c) being 100% by weight, with or without

(C) effective amounts of conventional additives.

4,554,321

FILM COMPOSITIONS OF BUTENE POLYMERS

Charles C. Hwo, Sugarland; George B. Klingensmith, and John A. Martone, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 407,375, Aug. 12, 1982, abandoned. This application Feb. 15, 1984, Ser. No. 580,318

Int. Cl.⁴ C08L *23/20*

U.S. Cl. 525—240 **10 Claims**

1. A film or sheet forming composition consisting essentially of a blend of about 50 to 95% by weight of an isotactic copolymer of butene-1 and ethylene containing from about 0.5 to 10 mole percent ethylene and from 50 to 5% by weight of a stereoregular elastomeric polymer of butene-1 which has by the following properties:

Solubility in refluxing ethyl ether (ether solubles): 2–6%

Crystallinity: 25–40%

Melting point, Form I: 110°–118° C.

Melting point, Form II: 98°–110° C.

Tensile strength at break, psi: 3,000–4,500

isotacticity: 71–80%

block lengths: <25

4,554,322

ROOM TEMPERATURE CURABLE POLYBUTADIENE RESINS WITH COPPER ETHYLACETOACETATE CATALYST

James R. Kwiecinski, Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 20, 1984, Ser. No. 591,358

Int. Cl.⁴ C08F *279/02, 4/10*

U.S. Cl. 525—245 **14 Claims**

1. A two-part polybutadiene containing resin system curable at room temperature in air comprising:

I. copper ethylacetoacetate; and

II. a blend which comprises

(A) about 5 to about 25% polybutadiene that is soluble in said blend;

(B) about 55 to about 90% dicyclopentadiene acrylate;

(C) about 5 to about 20% of a polyfunctional monomer having 2 to 4 unsaturated groups selected from vinylic, acrylic, and mixtures thereof;

(D) about 0.25 to about 3% free radical initiator; and

(E) about 0.1 to about 0.8% of a coaccelerator.

4,554,323

POLYMERIZABLE, OPTICALLY ACTIVE POLYMER AND PROCESS FOR PREPARING POLYMERIZABLE POLYMER

Heimei Yuki, Sakai, and Yoshio Okamoto, Amagasaki, both of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

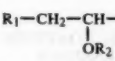
Filed May 10, 1983, Ser. No. 493,173

Claims priority, application Japan, May 21, 1982, 57-86206

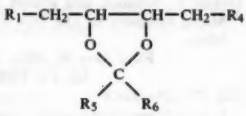
Int. Cl.⁴ C08F *2/06, 8/00*

U.S. Cl. 525—272 **5 Claims**

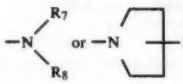
1. A process for producing a polymerizable, optically active polymer, which comprises: polymerizing at least one anionically polymerizable monomer selected from the group consisting of optically active monomers capable of forming an optically active polymer having asymmetric carbon atoms, and monomers capable of being polymerized to form a polymer having molecular asymmetry effective to make said polymer optically active, in the presence of an anionic polymerization initiator obtained from an amine containing one or more primary amino groups or two or more secondary amino groups, to obtain a polymer having a terminal amino group and then reacting said terminal amino group with a reactive vinyl compound to provide a vinyl group at the terminal of the molecule of said polymerizable, optically active polymer, wherein said initiator is an optically active initiator prepared by combining an alkali metal amide, an alkaline earth metal amide or an aluminum amide with an asymmetric ligand compound selected from the group consisting of (−)-sparteine, (+)-sparteine, (−)-6-ethylsparteine, (+)-6-benzylsparteine, (−)-dihydrosparteine,



and



wherein R_1 and R_4 are —O—R_7, —S—R_7,



R_2, R_3, R_5, R_6, R_7 and R_8 each are alkyl having 1 to 10 carbon atoms; X is hydrogen, alkyl having 1 to 10 carbon atoms or halogen; and n is a number of from 1 to 4.

4,554,324

ACRYLATE COPOLYMER PRESSURE-SENSITIVE ADHESIVE COMPOSITION AND SHEET MATERIALS COATED THEREWITH

James R. Husman, South St. Paul; James N. Kellen, Oakdale; Rebecca E. McCluney, Maplewood, and Michael L. Tumey, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Co., Saint Paul, Minn.

Division of Ser. No. 419,025, Sep. 16, 1982,. This application Apr. 4, 1985, Ser. No. 719,974

Int. Cl.⁴ C08F *259/04*

U.S. Cl. 525—301 **8 Claims**

1. A normally tacky and pressure-sensitive adhesive composition comprising copolymer having an inherent viscosity greater than 0.2 and consisting essentially of copolymerized repeating A and C monomers and optionally B monomers, wherein

A is a monomeric acrylic or methacrylic acid ester of a nontertiary alcohol, said alcohol having from 1 to 14 carbon atoms with the average number of carbon atoms being about 4–12;

when used, B is at least one polar monomer copolymerizable with said monomeric acrylic acid ester, the amount by weight of B monomer being up to 12% of the total weight of all monomers; and

C is a monomer having the general formula X—$(Y)_n$—Z wherein

X is a vinyl group copolymerizable with said A and B monomers;

Y is a divalent linking group; where n can be zero or 1;

Z is a monovalent polymeric moiety having a T_g greater than 20° C. and a molecular weight in the range of about 2,000 to 30,000 and being essentially unreactive under copolymerization conditions;

wherein said vinyl group and said A and B monomers are copolymerized to form a soft polymeric backbone having pendant therefrom said polymeric moieties and wherein the weight of said C monomer is within the range of about 1 to 30% of the total weight of all monomers in said copolymer and the total weight of said B and C monomers in said copolymer is within the range of about 4 to 30% of the total weight of all monomers in said copolymer, the amount of said C monomer in said polymer is such as to provide said adhesive composition with a shear holding value of at least 50 minutes.

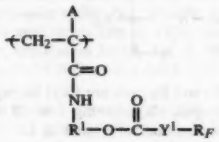
4,554,325

PERFLUOROCARBON BASED POLYMERIC COATINGS HAVING LOW CRITICAL SURFACE TENSIONS

Donald L. Schmidt, and Robert F. Harris, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 11, 1984, Ser. No. 609,264
Int. Cl.[4] C08F 8/18
U.S. Cl. 525—326.8 9 Claims

1. A polymer composition comprising pendant rearranged oxazoline and/or oxizane portions linked through an amide-ester linkage to a perfluorocarbon moiety having a perfluoroalkyl group and having a recurring unit of the formula:



wherein, A is hydrogen or methyl, R_F is a saturated perfluoroaliphatic moiety, Y^1 is a hydrocarbon moiety containing at least 2 carbon atoms, and R^1 is the remaining portion of a rearranged oxazoline or oxazine moiety.

4,554,326

PROCESS FOR THE MANUFACTURE OF HALOGENATED POLYMERS

Ronald C. Kowalski, New Providence; William M. Davis; Neil F. Newman, both of Edison; Z. Andrew Foroulis, Mendham, all of N.J., and Francis P. Baldwin, Coupeville, Wash., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 1, 1983, Ser. No. 481,320
Int. Cl.[4] C08F 8/22
U.S. Cl. 525—354 82 Claims

1. A process for the continuous production of halogenated polymer the process comprising contacting a cohesive polymer mass and halogenating agent in a continuous flow device comprising means for conveying said polymer through said device wherein said polymer and said halogenating agent are subjected to deformation and means for disengaging by-product of the halogenation reaction and unreacted halogenating agent from said halogenated polymer comprising injecting inert gas into said continuous flow device downstream of said contact between said polymer and said halogenating agent in order to neutralize said halogenated polymer.

4,554,327

ESTER-CONTAINING HALOPOLYALKYLENES

Michael I. Naiman, St. Louis, and John A. Schield, Chesterfield, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Continuation of Ser. No. 626,831, Jul. 2, 1984, Pat. No. 4,536,191, which is a continuation-in-part of Ser. No. 432,494, Oct. 4, 1982, abandoned, which is a continuation-in-part of Ser. No. 356,994, Mar. 11, 1982, Pat. No. 4,471,098. This application Apr. 22, 1985, Ser. No. 725,874
Int. Cl.[4] C08F 8/22
U.S. Cl. 525—356 2 Claims

1. An ester-containing halogenated polyalkylene characterized by internal olefinic unsaturation, by being essentially free of cross-linking, by having a branch index of from about 2 to about 20 and by having at least 1 percent of the halogen groups replaced by ester groups.

4,554,328

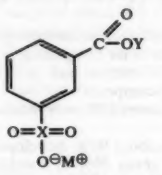
MODIFIED PET POLYMERS AND COPOLYMERS SUITABLE FOR EXTRUSION BLOW MOLDING

Stephen M. Sinker, Lebanon; Joseph J. Baron, Jr., Morris Plains, both of N.J.; Raymond W. Rupp, Corpus Christi, Tex.; Marvin L. Doerr, Pineville, N.C., and Charles E. McChesney, Monmouth Junction, N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Jan. 30, 1985, Ser. No. 696,570
Int. Cl.[4] C08G 63/76
U.S. Cl. 525—437 7 Claims

1. An improved modified polyethylene terephthalate polymer or copolymer of the type having high zero shear rate melt viscosity and shear sensitivity, comprising end-capped and branched polyethylene terephthalate polymer or copolymer molecules comprising terephthalic acid structual units and isophthalic acid structural units, of high molecular weight, formed by reacting end-capping agents and branch agents with low molecular weight polyethylene terephthalate polymer or copolymer molecules and thereafter polycondensing the end-capped and branched low molecular weight molecules to form high molecular weight molecules, wherein the improvement comprises:

the end-cap consists of the reacted component of a difunctional acid or alkali metal salt of a difunctional acid having the formula:



wherein:

X has a valency of 6 and is selected from sulfur, selenium, and tellurium;

M is an alkali metal or hydrogen; and,

Y is hydrogen or an aliphatic group containing from 1 to 18 carbon atoms.

4,554,329

MODIFIED PET POLYMERS AND COPOLYMERS SUITABLE FOR EXTRUSION BLOW MOLDING

Stephen M. Sinker, Lebanon, and Charles E. McChesney, Monmouth Junction, both of N.J., assignors to Celanese Corporation, New York, N.Y.

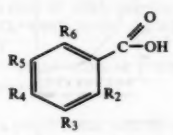
Filed Jan. 30, 1985, Ser. No. 696,606
Int. Cl.[4] C08G 63/76
U.S. Cl. 525—437 7 Claims

1. An improved modified polyethylene terephthalate poly-

mer or copolymer of the type having high zero shear rate melt viscosity and shear sensitivity, comprising end-capped and branched polyethylene terephthalate polymer or copolymer molecules comprising terephthalic acid structural units and isophthalic acid structural units, wherein the improvement comprises the combination of:

(a) the end-cap comprises the reacted component of a monofunctional acid having a normal boiling point or sublimation point less than above about 200° C.; and

(b) the monofunctional acid is an aromatic monocarboxylic acid having the formula:



wherein: R_3 and/or R_5 is an alkoxy group containing from 1 to 10 carbon atoms; and, the remaining R's are hydrogen.

4,554,330

POLYESTERCARBONATES EXHIBITING IMPROVED HEAT RESISTANCE FROM CYCLOALKYLIDENE DIPHENOL

Victor Mark, Evansville, and Charles V. Hedges, Mt. Vernon, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Continuation-in-part of Ser. No. 453,105, Dec. 17, 1982, abandoned. This application Jun. 18, 1984, Ser. No. 621,472

Int. Cl.[4] C08G *63/64;* **C08L** *67/02, 69/00*

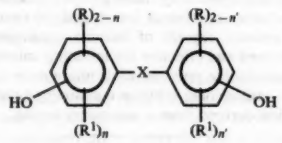
U.S. Cl. 525—462 **14 Claims**

9. A copolyester-carbonate composition exhibiting improved heat resistance comprising:

(i) an amount effective to improve the heat resistance of said composition of at least one high molecular weight, aromatic, thermoplastic, linear copolyester-carbonate resin which comprises the polymeric reaction products of

(a) a carbonate precursor,

(b) at least one dihydric phenol represented by the general formula



wherein

R is independently selected from hydrogen or lower alkyl radicals,

R^1 is independently selected from halogen radicals,

X is selected from monocyclic cycloalkylidene radicals containing from 12 to about 16 ring carbon atoms, and n and n′ are independently selected from whole numbers having a value of from 0 to 2 inclusive, with the proviso that the sum of n plus n′ is at least one, and

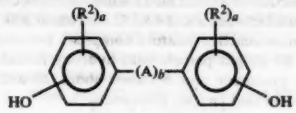
(c) at least one difunctional carboxylic acid or an ester forming reactive derivative thereof; and

(ii) at least one copolyester-carbonate resin which comprises the polymeric reaction products of

(d) a carbonate precursor,

(e) at least one difunctional carboxylic acid or an ester forming reactive derivative thereof, and

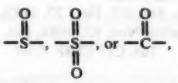
(f) at least one dihydric phenol represented by the general formula



wherein

R^2 is independently selected from halogen radicals, monovalent hydrocarbon radicals, or monovalent hydrocarbonoxy radicals,

A is selected from alkylene radicals, alkylidene radicals, cycloalkylene or cycloalkylidene radicals containing from 4 to 6 ring carbon atoms, —S—, —S—S—, —O—,



a is independently selected from whole numbers having a value of from 0 to 4 inclusive, and

b is either zero or one.

4,554,331

LIQUID COPOLYMERIC ORGANOSILOXANES

Kenneth C. Fey, Midland, and Harold V. Lefler, III, Sanford, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jul. 2, 1984, Ser. No. 627,124

Int. Cl.[4] C08F *283/00*

U.S. Cl. 525—478 **11 Claims**

1. A composition comprising the product obtained by reacting:

(A) 100 parts by weight of the reaction product of

(i) an organosilicon resin consisting essentially of $R_3SiO_{\frac{1}{2}}$ units and $SiO_{4/2}$ units, wherein R represents a monovalent hydrocarbon radical, and the ratio of $R_3SiO_{\frac{1}{2}}$ units to $SiO_{4/2}$ units is from 0.6/1 to 0.9/1 and

(ii) a polyorganohydrogensiloxane; with

(B) 1 to 50 parts by weight of a compound selected from the group consisting of acyloxysilanes, alkoxysilanes, oximosilanes, and acyl halides, said reacting being done at a temperature and for a period of time sufficient to by-produce a volatile compound selected from the group consisting of alcohols, acids and ketoximes.

4,554,332

THERMOSETTING COATING COMPOSITION USEFUL AS CHIP RESISTANT PRIMER II

Panagiotis I. Kordomenos, Mt. Clemens; Andrew H. Dervan, Fraser, and Dennis J. Grebur, Berkley, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 5, 1983, Ser. No. 510,796

Int. Cl.[4] C08G *59/16*

U.S. Cl. 525—532 **17 Claims**

1. A novel, epoxy-polyester graft copolymer adapted for use in a thermosetting composition, which copolymer has a number average molecular weight ($\overline{Mn}$) of between about 2,000 and about 20,000, said copolymer being prepared by polymerization of lactone monomers in the presence of hydroxy functional epoxy ester resin precursor which has a number average molecular weight ($\overline{Mn}$) of between about 1,000 and about 4,000 and which has been prepared by reacting chain extended diepoxide with hydroxy functional secondary amine in chain terminating reaction in approximately 1 to 1 equivalent ratio, said chain extended diepoxide being prepared by reacting diepoxide substantially simultaneously with diphenol and dicarboxylic acid in amounts sufficient to give a weight per epoxide

(WPE) of between about 500 and about 2,500, and wherein said polymerization of said lactone monomers is carried out at a temperature between about 130° C. and about 200° C. and the polymerization reaction mixture comprises between about 10 and about 80 weight percent said hydroxy functional epoxy ester resin precursor and between about 20 and about 90 weight percent said lactone monomers.

4,554,333

POLYMERIZATION OF OLEFINS EMPLOYING A CATALYST CONTAINING A TITANIUM COMPONENT DERIVED FROM ALICYCLIC HYDROXY COMPOUNDS

William M. Coleman, III, Lake Jackson, and Morris S. Edmondson, Alvin, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 566,107, Dec. 27, 1983, Pat. No. 4,528,339. This application Nov. 13, 1984, Ser. No. 670,448

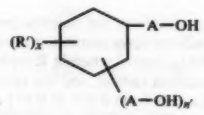
Int. Cl.⁴ C08F *4/44*

U.S. Cl. 526—127 **24 Claims**

1. In a process for polymerizing at least one α-olefin or a mixture of at least one α-olefin and at least one polymerizable ethylenically unsaturated monomer in the presence of a supported Ziegler-Natta catalyst; the improvement which comprises employing as the transition metal component of such catalyst that which results from reacting

(A) at least one titanium compound represented by the formula $Ti(OR)_xX_{4-x}$ wherein each R is independently a hydrocarbyl group having from 1 to about 20 carbon atoms; X is a halogen and x has a value from zero to 4; with

(B) at least one compound containing at least one aliphatic hydroxyl group represented by the formula



wherein each A is independently a divalent hydrocarbyl group having from 1 to about 10 carbon atoms; R' is independently hydrogen, a halogen atom, a hydrocarbyl group, a hydrocarbyloxy group or a halogen, nitro or hydrocarbyloxy substituted hydrocarbyl group or a halogen, nitro or hydrocarbyloxy substituted hydrocarbyloxy group, each such hydrocarbyl or hydrocarbyloxy groups having from 1 to about 20 carbon atoms; n' has a value of from 1 to 5, and x independently has a value of from zero to 4; and wherein components (A) and (B) are employed in quantities which provide a molar ratio of (B):(A) of 0.1:1 to about 10:1.

4,554,334

PROCESS FOR PREPARING OPTICALLY ACTIVE POLYMER

Heimei Yuki, Sakai, and Yoshio Okamoto, Amagasaki, both of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

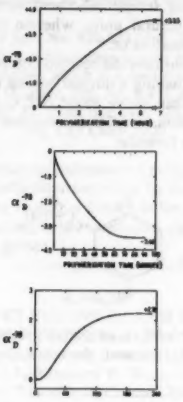
Division of Ser. No. 471,584, Mar. 3, 1983, Pat. No. 4,478,953. This application Aug. 10, 1984, Ser. No. 639,967

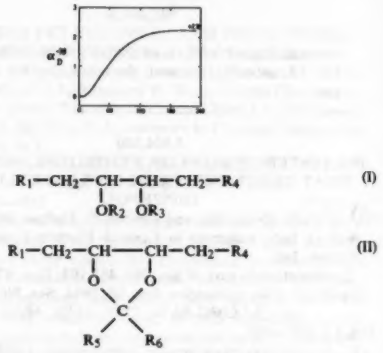
Claims priority, application Japan, Mar. 9, 1982, 57-36909

Int. Cl.⁴ C08F *4/46, 4/50, 4/52*

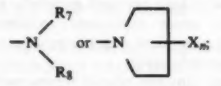
U.S. Cl. 526—177 **10 Claims**

1. A process for preparing an optically active polymer, which comprises polymerizing an anionically polymerizable monomer containing a vinyl group, in the presence of an anionic polymerization catalyst comprising a complex of (A) an asymmetric ligand compound of the formula (I) or formula (II):





in which R_1 and R_4 each is —O—R_7, —S—R_7,



R_2, R_3, R_5, R_6, R_7 and R_8 each is alkyl having 1 to 10 carbon atoms; X is hydrogen, alkyl having 1 to 10 carbon atoms or halogen; and n is a number of 1 to 4; and (B) an anionic polymerization initiator capable of forming a complex with said ligand compound and effective for initiating anionic polymerization of anionically polymerizable monomers containing a vinyl group, said anionic initiator containing a carbanion or a nitrogen anion derived from a secondary amine.

4,554,335

DIELECTRIC POLYMER MATERIALS

Teruo Sakagami; Noriyuki Arakawa; Yoshikichi Teramoto, and Kenichi Nakamura, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 398,192, Jul. 14, 1982, abandoned, which is a continuation-in-part of Ser. No. 256,839, Apr. 23, 1981, abandoned. This application Feb. 29, 1984, Ser. No. 584,600

Claims priority, application Japan, Apr. 28, 1980, 55-56817

Int. Cl.⁴ C08F *214/22*; H01G *4/22*

U.S. Cl. 526—249 **5 Claims**

1. A dielectric polymer material consisting essentially of approximately 25 to approximately 90 mol% of vinylidene fluoride, approximately 5 to approximately 70 mol% of ethylene trifluoride, approximately 3 to approximately 10 mol% of ethylene chloride trifluoride, and up to about 3 mol% of another fluorine-containing monomer said material having a dielectric constant of at least about 20 over at least a fifty

celcius degree temperature range between room temperature and 100° C., said material having a difference between maximum and minimum dielectric constant values less than about 13 over said fifty degree range.

4,554,336

URETHANE MODIFIED ORTHODONTIC ADHESIVE

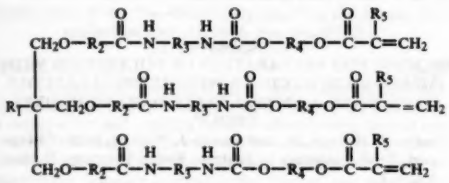
Patrick D. Kidd, San Dimas, and Terry L. Sterrett, Long Beach, both of Calif., assignors to Sybron Corporation, Rochester, N.Y.

Filed Oct. 28, 1983, Ser. No. 546,472
Int. Cl.⁴ C08F *26/02, 126/02, 226/02*
U.S. Cl. 526—301 **3 Claims**

1. A two-paste dental adhesive composition which comprises in weight percent:

Part A:

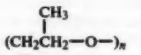
at least 5% of a trifunctional methacrylate or acrylic terminated urethane resin of the following chemical structure:



Where:

R_1 is —H, —CH_3, —CH_2CH_3 or —$CH_2CH_2CH_3$,

R_2 is (—CH_2CH_2—O—)$_n$ or



where: n=2 to 10,

R_3 is a divalent organic radical obtained by removal of two isocyanato groups from an organic diisocyanate,

R_4 is methylene, ethylene or propylene, and

R_5 is —H, or —CH_3,

blended with up to 95% of at least one polymerizable acrylate or methacrylate monomer, a catalyst, and a filler material; and

Part B:

at least 5% of said trifunctional methacrylate or acrylic terminated urethane resin blended with up to 95% of at least one polymerizable acrylate or methacrylate monomer, a polymerization activator, and a filler material.

4,554,337

MODIFIED PROTEIN ADHESIVE BINDER AND PROCESS FOR PRODUCING

Thomas L. Krinski, Granite City, and Alan L. Steinmetz, Belleville, both of Ill., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Jan. 18, 1985, Ser. No. 692,732
Int. Cl.⁴ C08J *7/16;* **C08L** *89/00;* **C09J** *3/18*
U.S. Cl. 527—201 **43 Claims**

1. A process for the production of a modified vegetable protein adhesive binder comprising:

(a) forming an alkaline dispersion of a vegetable protein material;

(b) treating said dispersion with an alkyl acrylamidoglycolate alkyl ether in an amount sufficient to modify the protein material.

4,554,338

ROOM TEMPERATURE VULCANIZABLE ORGANOPOLYSILOXANE COMPOSITIONS AND METHOD FOR MAKING

Jeffrey H. Wengrovius, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 27, 1984, Ser. No. 644,893
Int. Cl.⁴ C08G *77/06*
U.S. Cl. 528—18 **7 Claims**

1. A room temperature vulcanizable organopolysiloxane composition comprising by weight

(A) 100 parts of alkoxy terminated organopolysiloxane;

(B) up to 10 parts of polyalkoxy silane;

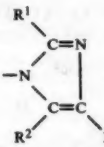
(C) up to 5 parts of amine accelerator selected from the class consisting of primary amines, secondary amines, and silylated secondary amines and

(D) an effective amount of a tin condensation catalyst of the formula

$(R_2)Sn(Q)_2$

where Q is a monovalent radical selected from a triazole having the formula,

and an imidazole having the formula,



R is selected from $C_{(1-18)}$ monovalent hydrocarbon radicals and substituted $C_{(1-18)}$ monovalent hydrocarbon radicals, R^1, R^2 and R^3 are selected from the same or different monovalent radicals selected from hydrogen and R radicals and X is divalent $C_{(1-50)}$ organic radical selected from hydrocarbon radicals and substituted hydrocarbon radicals.

4,554,339

ORGANOPOLYSILOXANES CONTAINING BOTH ACRYLOXYALKYL GROUPS AND SI-BONDED HYDROGEN ATOMS IN THE SAME MOLECULE

Friedrich Hockemeyer, Emmerting, and Gerhard Preiner, Burghausen, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed May 11, 1983, Ser. No. 493,500
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1982, 3222839
Int. Cl.⁴ C08G *77/04*
U.S. Cl. 528—26 **5 Claims**

1. An organopolysiloxane having a viscosity of at least 100 mPa.s at 25° C., and having SiC-bonded acryloxyalkyl groups and Si-bonded hydrogen in the same molecule.

4,554,340

HOMOGENEOUS, STORAGE-STABLE POLYOL COMPOSITIONS OF HIGH ETHYLENE GLYCOL CONTENT AND THEIR USE FOR THE PRODUCTION OF POLYURETHANES

Rudolf Heusch, Leverkusen; Werner Rasshofer, Cologne; Wolfgang Reichmann, Hilden, and Adolf Richartz, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Division of Ser. No. 497,626, May 24, 1983, Pat. No. 4,518,521.
This application Feb. 19, 1985, Ser. No. 703,059
Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219759
Int. Cl.[4] C08G *18/32*
U.S. Cl. 528—77 4 Claims

1. A process for the production of polyurethanes comprising reacting isocyanates with a homogeneous, storage-stable, emulsifier-free polyol mixture having a high mixed OH-number and a high ethylene glycol content comprising 100 parts of a relatively high molecular weight polyalkylene oxide polyol having an OH-number of from 20 to 210, which contains at least 5%, and less than 80%, by weight of terminal ethylene oxide blocks and from 0.1 to 30 parts of a low molecular weight diol mixture having an OH-number of 1200 to 1650 in the form of a reaction product of 1 mole of ethylene glycol with 0.1 to 0.5 moles of propylene oxide.

4,554,341

FIRE RETARDANT, FAST REACTING EPOXY RESIN

Robert C. Allen, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 27, 1985, Ser. No. 706,365
Int. Cl.[4] C08G *59/42, 59/68*
U.S. Cl. 528—89 19 Claims

1. A heat-curable composition comprising:
(1) from about 50 to about 99 parts by weight of a polyepoxide possessing more than one vic-epoxy group,
(2) from about 1 to about 50 parts by weight of an unsaturated aromatic monomer,
(3) from about 0.25 to about 2.0 stoichiometric equivalents based on the polyepoxide of a carboxyl-containing compound,
(4) from about 0.1 to about 1.0 stoichiometric equivalents based on the polyepoxide of a halogenated acid anhydride compound,
(5) an epoxy curing accelerator composition comprising from about 0.001 to about 10 parts by weight per 100 parts by weight of the polyepoxide of an onium compound, and
(6) a curing amount of a free-radical curing agent.

4,554,342

HEAT-CURABLE COMPOSITIONS COMPRISING AN EPOXY RESIN, AN AMINE AND A SULFONIUM SALT

Larry S. Corley, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 30, 1984, Ser. No. 635,984
Int. Cl.[4] C08G *59/56, 59/68*
U.S. Cl. 528—90 19 Claims

1. A curable composition consisting essentially of (a) a polyepoxide, (b) at least one aromatic or aliphatic amine present in an amount effective to cure the polyepoxide under curing conditions, and (c) a catalytic amount of a trihydrocarbyl sulfonium salt comprising substituted or unsubstituted alkyl or aryl radicals.

4,554,343

PROCESS FOR THE PRODUCTION OF HIGH MOLECULAR WEIGHT POLYESTER

Winston J. Jackson, Jr., and Joseph J. Watkins, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 23, 1984, Ser. No. 674,118
Int. Cl.[4] C08G *63/22*
U.S. Cl. 528—274 7 Claims

1. Process for the preparation of high molecular weight polyesters comprising reacting substantially equimolar amounts of an acid component comprising at least 50 mole % of at least one alicyclic or aromatic dicarboxylic anhydride or corresponding dicarboxylic acid having 6 to 30 carbon atoms with 1,3-cyclohexanedimethanol, 1,4-cyclohexanedimethanol or mixtures thereof, at a temperature between about 110° C. and about 180° C. in a solvent comprising benzene having 1 to 2 chlorine or alkyl substituents having 1 to 4 carbon atoms, azeotropically removing water from the reaction mixture while condensing solvent vapor and returning it to the reaction mixture, and recovering the polyester after an inherent viscosity of at least 0.4 has been attained.

4,554,344

PROCESS FOR PREPARATION OF POLYESTERS WITH IMPROVED MOLECULAR WEIGHT FROM GLYCOLS CONTAINING A VICINAL SECONDARY HYDROXYL GROUP

Winston J. Jackson, Jr., and Joseph J. Watkins, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 12, 1985, Ser. No. 722,583
Int. Cl.[4] C08G *63/34*
U.S. Cl. 528—283 2 Claims

1. Process for the preparation of a polyester which comprises reacting and polycondensing an aromatic dicarboxylic acid or a polyester-forming derivative thereof with a diol containing vicinal hydroxyl groups wherein at least one hydroxyl group is secondary under polyester-forming conditions of temperature, pressure and time in the presence of at least 800 ppm tin.

4,554,345

PREPARATION OF LIQUID POLYAMIDE FROM DINITRILE AND DIAMINE

Janice L. Greene, Chagrin Falls, and Roman Loza, Solon, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 250,797, Apr. 3, 1981, Pat. No. 4,380,623. This application May 2, 1983, Ser. No. 490,284
Int. Cl.[4] C08G *69/00*
U.S. Cl. 528—336 6 Claims

1. A process for preparing a liquid polyamide comprising contacting a diamine with water and a dinitrile in the presence of carbon dioxide.

4,554,346

PREPARATION OF CURABLE RESIN FROM CYANATE ESTER COMPOUND

Morio Gaku, Saitama; Hidenori Kimbara, and Jun Yokoi, both of Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jul. 18, 1984, Ser. No. 633,035
Claims priority, application Japan, Jul. 22, 1983, 58-134025
Int. Cl.[4] C08G *83/00*
U.S. Cl. 528—363 7 Claims

1. A process for producing a curable resin which comprises reacting
(a) at least one cyanate ester component selected from the group consisting of
(i) a polyfunctional cyanate ester monomer having the formula:

$R^1—O—C{=}N)_m$

wherein m is an integer of 2 to 10 and R^1 is an aromatic organic group, the cyanate groups being directly bonded to the aromatic nucleus of said aromatic group,

(ii) a prepolymer of (i), and

(iii) a coprepolymer of (i) and an amine

with (b) at least one compound having (1) at least one hydroxy group and (2) at least one radical polymerizable unsaturated double bond in its molecule

in contact with (c) a radical polymerization inhibitor at a temperature of about 80°-about 140° C., wherein the ratio of the cyanate group to the hydroxy group is in the range of from about 1:0.1 to about 1:2.

4,554,347

MICROWAVE CURING OF LATEX-BASED COMPOSITIONS

J. Barry Hawkes, Jr., Watertown, Mass., assignor to W. R. Grace & Co., Lexington, Mass.

Division of Ser. No. 632,682, Jul. 20, 1984, , which is a continuation of Ser. No. 419,376, Sep. 20, 1982, abandoned. This application Nov. 13, 1984, Ser. No. 670,781

Int. Cl.⁴ H05B *1/00*

U.S. Cl. 528—503 **12 Claims**

1. A process of forming a cured latex based composition comprising the steps of heating a fluid rubber latex containing a curing agent and a gelling agent to effect gelling thereof and removal of a major proportion of the water initially contained therein and subjecting the resultant gelled composition to microwave radiation to effect curing thereof, said microwave radiation being modulated to provide substantially uniform and complete curing of said gelled composition.

4,554,348

2-AMINO-CINNAMOYLTHIOPHENE ACID AZO DYE COMPOUNDS HAVING AN ANILINE, TETRAHYDROQUINOLINE, OR BENZOMORPHOLINE COUPLER

Robert N. Gourley, Formby, England, assignor to Eastman Kodak Company, Rochester, N.Y.

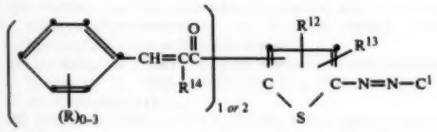
Filed Jan. 23, 1984, Ser. No. 573,237

Claims priority, application United Kingdom, Oct. 7, 1983, 8326870

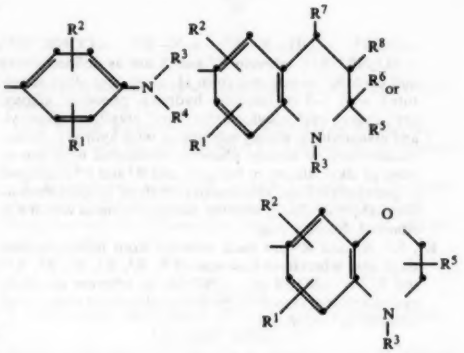
Int. Cl.⁴ C09B *29/033, 29/09, 29/36, 29/44*

U.S. Cl. 534—768 **14 Claims**

1. A dye compound having the formula



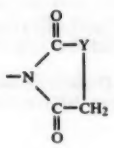
wherein each R^{14} is H or alkyl; each R is a substituent independently selected from alkyl, hydroxy, alkoxy, carboxy, halogen, nitro, alkoxycarbonyl, alkanoyloxy, alkanoyl, alkylamino, cyano, dialkylamino, and alkyl substituted with 1-3 of halogen, alkoxy, alkanoyl, alkanoyloxy, alkoxycarbonyl, alkanoylamino, cyano, nitro, carbamoyl, alkylcarbamoyl, sulfamoyl, or alkylsulfamoyl; R^{12} and R^{13} are each selected from H, alkyl, alkoxy, alkanoyl, halogen, alkylsulfonyl, alkanoyloxy, SO_2NH_2, $SO_2NHalkyl$, $SO_2N(alkyl)_2$, $CONH_2$, CONHalkyl, —COOH, $CON(alkyl)_2$, arylsulfonyl, alkanoyl, alkanoylamido, aroyl, aryl, alkylthio, arylthio, alkenylthio, alkoxycarbonyl, hydroxyalkylcarbamoyl, cyclohexylthio, $SO_3C_6H_5$, cyano, thiocyano, cyclohexylsulfonyl, cyclohexyl, and alkyl substituted with 1-3 of alkoxy, cyano, halogen, SO_2alkyl, CONHalkyl, alkanoyloxy, or $SO_2NHalkyl$; C^1 is an aniline, tetrahydroquinoline, or benzomorpholine type azo type dye coupler which is unsubstituted or substituted; wherein at least one $—SO_3M$, or $—OSO_3M$ group is present in said dye compound where M is selected from H^+, NH_4^+, Na^+, K^+, and the colorless cations of sulfuric acid or sulfonic acid salts of trimethylamine, triethylamine, and N,N-dimethylaniline; and wherein the coupler is selected from



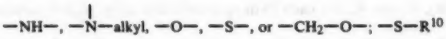
wherein:

R^1 and R^2 are each selected from hydrogen, fluorine, chlorine, bromine, alkyl, aryl, cycloalkyl, —COOH, alkoxy, phenoxy, alkylthio, arylthio, and radicals having the formula $—NH—X—R^9$ in which X is —CO—, —COO—, or $—SO_2—$ and R^9 is selected from alkyl and alkyl substituted with halogen, hydroxy, phenoxy, aryl, cyano, cycloalkyl, alkylsulfonyl, alkylthio, alkanoyloxy, and alkoxy, and when X is —CO— in the formula $—NH—X—R^9$, R^9 also can be hydrogen, amino, alkenyl, alkylamino, dialkylamino, arylamino, aryl, or furyl;

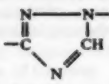
R^3 and R^4 are selected from hydrogen; cycloalkyl; cycloalkyl substituted with one or two groups selected from alkyl, —OH, alkoxy, halogen, —COOH, and hydroxy substituted alkyl; phenyl or phenyl substituted with alkyl, —COOH, alkoxy, halogen, alkanoylamino, cyano or alkoxycarbonyl; straight or branched alkenyl; straight or branched alkyl and such alkyl substituted with 1-3 of the following: hydroxy; —COOH; halogen; cyano; amino; alkoxy; hydroxyalkoxy; succinimido; glutarimido; phenylcarbamoyloxy; phthalimido; phthalimidino; 2-pyrrolidono; cyclohexyl; phenoxy; phenyl or phenyl substituted with alkyl, alkoxy, halogen, alkanoylamino, cyano or alkoxycarbonyl; alkanoylamino; sulfamoyl; alkylsulfamoyl; vinylsulfonyl; acrylamido; benzoylsulfonicimido; alkylsulfonamido; phenylsulfonamido; alkoxycarbonylamino; alkylcarbamoyloxy; alkoxycarbonyl; alkoxycarbonyloxy; alkenylcarbonylamino; a group of the formula



wherein Y is



wherein R^{10} is alkyl, phenyl, phenyl substituted with halogen, alkyl, alkoxy, alkanoylamino, cyano, or alkoxycarbonyl, pyridyl, pyrimidinyl, benzoxazolyl, benzimidazolyl, benzothiazolyl, or



—OXR^9; —NH—X—R^9; —X—R^9; —CONR^{11}R^{11}; —SO$_2$NR^{11}R^{11}; wherein R^9 and X are as defined above and each R^{11} is selected from H, alkyl, and alkyl substituted with 1–3 of halogen, hydroxy, phenoxy, alkoxy, aryl, cyano, cycloalkyl, alkylsulfonyl, alkylthio, alkanoyl, and alkanoyloxy; alkoxy substituted with hydroxy, cyano, alkanoyloxy, or alkoxy; phenoxy substituted with one or more of alkyl, alkoxy or halogen; and R^3 and R^4 combined as pentamethylene, ethyleneoxyethylene or ethylenesulfonylethylene which, with the nitrogen atom to which it is attached, forms a ring;

R^5, R^6, R^7 and R^8 are each selected from hydrogen and alkyl; and wherein at least one of R, R^1, R^2, R^3, R^4, R^{12} and R^{13} is —SO$_3$M or —OSO$_3$M, or wherein an alkyl, cycloalkyl or aryl moiety thereof is substituted with 1–3 of —SO$_3$M or —OSO$_3$M.

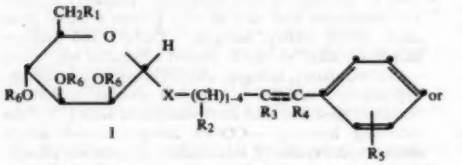
4,554,349

ARALKYL AND ARALKENYL GLYCOSIDES AS INHIBITORS OF ANTIGEN-SPECIFIC T-CELL PROLIFERATION

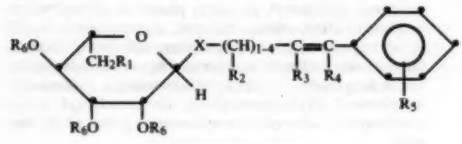
Mitree M. Ponpipom, Branchburg; Tsung-Ying Shen, Westfield, and Robert L. Bugianesi, Colonia, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 11, 1983, Ser. No. 540,594
Int. Cl.^{4} C07H *5/06*
U.S. Cl. 536—55 **9 Claims**

1. Glycosides of the formulas:



I

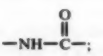


II

wherein the dotted line represents a carbon-carbon bond or an additional hydrogen attached to each of the carbons connected thereto;

R$_1$ is H, OH, OCH$_3$, α-D-mannopyranosyloxy, N$_3$, NH$_2$, NH-alkanoyl of 1–5 carbons, NH-oleiyl, or NH-lipoyl;

X is —S—, —O—, or



R$_2$, R$_3$ and R$_4$ are each hydrogen or lower alkyl of 1–4 carbon atoms;

R$_5$ is H, Cl, F, OH, O-alkyl of 1–4 carbons, S-alkyl of 1–4 carbons and their sulfoxide and sulfone, NRR^1 where R and R^1=H, or R=H, R^1=alkyl of 1–4 carbons, or R=R^1=alkyl of 1–4 carbons; and

R$_6$ is hydrogen or lower alkanoyl of from 1–4 carbon atoms.

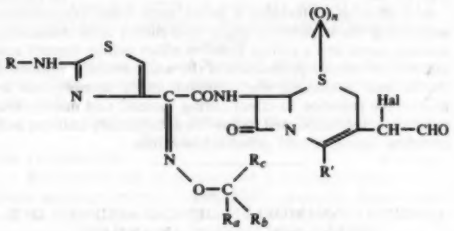
4,554,350

3-(1-HALO-2-OXOETHYL)CEPHALOSPORIN INTERMEDIATES

Pierre Le Roy; Daniel Farge, both of Thiais; Claude Moutonnier, Le Plessis Robinson; Jean-Francois Peyronel, Palaiseau, and Bernard Plau, Cretell, all of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

Filed Aug. 11, 1983, Ser. No. 522,261
Claims priority, application France, Aug. 13, 1982, 82 14093
Int. Cl.^{4} C07D *501/24*
U.S. Cl. 544—22 **6 Claims**

1. A cephalosporin compound of the formula:



in which R represents an amino-protecting radical, R′ represents a protected carboxyl radical, Hal represents a chlorine, bromine or iodine atom, and either R$_a$, R$_b$ and R$_c$ each represent a hydrogen atom, or R$_a$ represents a protected carboxyl radical and R$_b$ and R$_c$ which are identical or different, represents hydrogen atoms or alkyl radicals having 1 to 4 carbon atoms, or together form an alkylene radical having 2 to 5 carbon atoms, and n is equal to 0 or 1, the group —OCR$_a$R$_b$R$_c$ being in the syn position; and, when R$_b$ and R$_c$ are different, diastereoisomers of the said cephalosporin compound.

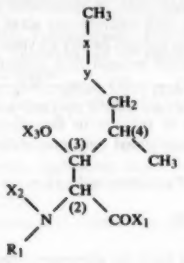
4,554,351

METHOD FOR THE TOTAL SYNTHESIS OF CYCLOSPORINS, NOVEL CYCLOSPORINS AND NOVEL INTERMEDIATES AND METHODS FOR THEIR PRODUCTION

Roland Wenger, Riehen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 299,103, Sep. 3, 1981, Pat. No. 4,396,542, which is a continuation-in-part of Ser. No. 233,713, Feb. 12, 1981, abandoned. This application May 5, 1983, Ser. No. 491,991
Claims priority, application Switzerland, Feb. 14, 1980, 1223/80
Int. Cl.^{4} C07C *101/30*; C07D *87/36, 27/08, 29/24*
U.S. Cl. 544—177 **8 Claims**

1. A compound of formula III



(III)

wherein —x—y— is $—CH_2—CH_2—$ or —CH=CH—,

R_1 is hydrogen or methyl,

X_1 is hydroxy or a carboxy protecting group suitable for peptide synthesis or a carboxy activating group suitable for peptide synthesis,

X_2 is hydrogen or an N-protecting group suitable for peptide synthesis, and

X_3 is hydrogen or an O-protecting group suitable for peptide synthesis or

(X_2+X_3) is a protecting group suitable for peptide synthesis bridging the 2-N and 3-O functions or

(X_2+R_1) is a divalent N-protecting group suitable for peptide synthesis,

and wherein the positions 2, 3 and 4 have the configuration S,R and R or R,S and S respectively.

4,554,352

PREPARATION OF 1-ALKYL-1,4-DIHYDRO-4-OXO-7-(4-PYRIDYL)-3-QUINOLINECARBOXYLIC ACID

Paul F. Ranken, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Sep. 29, 1983, Ser. No. 537,078

Int. Cl.⁴ C07D *215/16, 211/72, 211/70*

U.S. Cl. 546—156 **4 Claims**

1. A process which comprises:

(a) reacting a 4-phenylpyridine with bromine in the presence of excess Lewis acid catalyst to form a 4-(4-bromophenyl)pyridine,

(b) nitrating the 4-(4-bromophenyl)pyridine to a 4-(4-bromo-3-nitrophenyl)pyridine,

(c) reducing the 4-(4-bromo-3-nitrophenyl)pyridine to a 4-(3-aminophenyl)pyridine,

(d) reacting the 4-(3-aminophenyl)pyridine with a dialkyl ethoxymethylenemalonate to form a dialkyl 3-(4-pyridinyl)-anilinomethylenemalonate,

(e) cyclizing the dialkyl 3-(4-pyridinyl)anilinomethylenemalonate to an alkyl 1,4-dihydro-4-oxo-7-(4-pyridinyl)-3-quinolinecarboxylate,

(f) N-alkylating the alkyl 1,4-dihydro-4-oxo-7-(4-pyridinyl)-3-quinolinecarboxylate to an alkyl 1-alkyl-1,4-dihydro-4-oxo-7-(4-pyridinyl)-3-quinolinecarboxylate, and

(g) hydrolyzing the alkyl 1-alkyl-1,4-dihydro-4-oxo-7-(4-pyridinyl)-3-quinolinecarboxylate to a 1-alkyl-1,4-dihyro-4-oxo-7-(4-pyridinyl)-3-quinolinecarboxylic acid.

4,554,353

2,5-PYRROLIDINEDIONE DERIVATIVES USEFUL AS ANTIARRHYTHMIC AGENTS

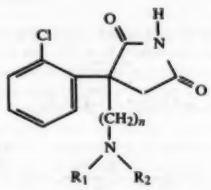
Robert J. Chorvat, Arlington Heights, and Bipinchandra N. Desai, Vernon Hills, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Aug. 3, 1984, Ser. No. 637,633

Int. Cl.⁴ C07D *403/06, 207/40*

U.S. Cl. 546—208 **4 Claims**

1. A compound of the formula:



and the pharmaceutically acceptable acid addition salts thereof wherein n is 2 or 3;

and R_1 and R_2 are n-propyl or isopropyl or R_1 and R_2 together with the nitrogen form a 2,6 dimethyl-1-piperidinyl group.

3. A compound according to claim 1 which is 3-(2-chlorophenyl)-3-[2-(2,6-dimethyl-1-piperidinyl)ethyl]-2,5-pyrrolidinedione and the pharmaceutically acceptable acid addition salts thereof.

4,554,354

TINTABLE, DYEABLE, CURABLE COATINGS AND COATED ARTICLES

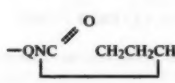
Loren A. Haluska, and Marcelle G. Molzahn, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation of Ser. No. 484,772, Apr. 14, 1983, abandoned, which is a division of Ser. No. 340,160, Jan. 18, 1982, Pat. No. 4,421,893. This application Dec. 14, 1984, Ser. No. 681,470

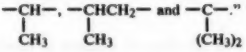
Int. Cl.⁴ C07F *7/10*

U.S. Cl. 548—110 **6 Claims**

1. A composition of matter which is a silane having the general formula $(XO)_2SiRSR'$ wherein X is an alkyl radical of 1–4 carbon atoms, R is a divalent aliphatic hydrocarbon radical containing less than five carbon atoms and R' is



wherein Q is a radical selected from a group consisting of $—CH_2CH_2—$, $—CH_2CH_2CH_2—$,



4,554,355

HETEROCYCLIC COMPOUNDS AS ANTIALLERGIC AGENTS

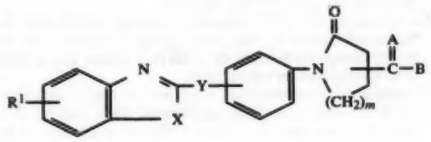
John H. Musser, Malvern, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Jul. 19, 1984, Ser. No. 632,573

Int. Cl.⁴ C07D *277/64, 263/32;* **C07P** *235/16*

U.S. Cl. 548—180 **4 Claims**

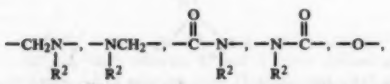
1. A compound having the formula

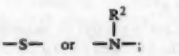


wherein

X is —O—, —S— or

Y is —CH_2O—, —OCH_2—, —CH_2S—, —SCH_2—,





m is 1–3;
A is O or NR^2;
B is OR^2, SR^2 or $N(R^2)_2$;
R^1 is hydrogen, loweralkyl, loweralkoxy or halo;
R^2 is hydrogen or loweralkyl;
and the pharmaceutically acceptable salts thereof.

4,554,356

METHOD FOR PRODUCTION OF IMIDAZOLYL VINYL ETHERS

Ludwig Zirngibl, and Kurt Thiele, both of Zofingen, Switzerland, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland

PCT No. PCT/EP82/00010, § 371 Date May 24, 1982, § 102(e) Date May 24, 1982, PCT Pub. No. WO82/02552, PCT Pub. Date Aug. 5, 1982

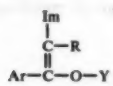
Continuation of Ser. No. 566,776, Dec. 29, 1983, abandoned, which is a continuation of Ser. No. 385,403, May 24, 1982, abandoned. This PCT application Jan. 21, 1982, Ser. No. 692,324

Claims priority, application Switzerland, Jan. 23, 1981, 430/81

Int. Cl.[4] C07D *233/60*

U.S. Cl. 548—341 **17 Claims**

1. Process for the production of an imidazolyl-vinyl ether of the formula



(I)

or an acid addition salt thereof, wherein in formula (I)

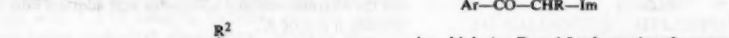
Ar represents a phenyl, napthyl, thienyl or pyridyl ring, wherein said ring optionally is mono- or multi-substituted and the substituents, independently from each other, represent a halogen, a lower alkyl group or a cycloalkyl group with up to 6 carbon atoms, a trifluoromethyl, a lower alkoxy or a lower alkylthio group with 1 to 6 carbon atoms in the alkyl portion thereof, a phenyl, benzyl, cyano, nitro, amino or loweralkyl amino group,

R represents hydrogen, an unbranched or branched alkyl group with up to 6 carbon atoms, phenyl, or a phenyl-substituted alkyl group with up to 6 carbon atoms in the alkyl portion, wherein said phenyl group optionally is substituted by halogen, alkyl or alkoxy with up to 6 carbon atoms in the alkyl portion thereof,

Im represents the 1-H-imidazol-1-yl group, which may be mono-substituted by the nitro group or mono-, di- or tri-substituted by halogen or an alkyl or alkoxy group with 1 to 4 alkyl carbon atoms, and

Y represents an unbranched, branched or cyclic, saturated or doble bond containing unsaturated alkyl with up to 6 carbon atoms, phenyl, naphthyl, thienyl or pyridyl or an alkyl substituted with a phenyl, naphthyl, pyridyl or thienyl group having 1 to 6 carbon atoms in the alkyl portion, wherein all the preceding groups, including the alkyl groups, may, in each case, be substituted as stated above for the Ar group, and wherein any alkyl group directly bonded to the ether oxygen or any alkylene group bonded directly to the ether oxygen may contain the bivalent groups —O—, —S—, —SO—, or —SO_2— once or twice in the chain, or may terminally carry one of these groups in the ω-position in relation to the ether oxygen, said group being then saturated with one of the groups mentioned for Ar,

through the reaction of a corresponding ketone of the formula



(II),

in which Ar, R and Im have the aforementioned meanings, in an alkaline medium with a compound of the formula

(III),

in which Y is as above-defined, Z is an alkaline splittable group and separation of the reaction product, wherein said reaction is carried out in an aqueous solution of a strong inorganic base.

4,554,357

BIS-QUATERNARY SALTS AS PHASE TRANSFER CATALYSTS FOR AROMATIC ETHER IMIDE PREPARATION

John W. Verbicky, Jr., Scotia, and Elbridge A. O'Neil, Jr., Port Henry, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 527,617, Aug. 29, 1983, abandoned. This application Oct. 14, 1983, Ser. No. 542,242

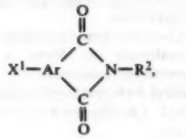
Int. Cl.[4] C07D *209/48, 403/10, 403/12*

U.S. Cl. 548—461 **12 Claims**

1. In a method for preparing an aromatic ether imide by the reaction, in a non-polar organic solvent in the presence of a phase transfer catalyst, of (A) at least one hydroxyaromatic alkali metal salt having the formula

(I)

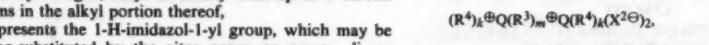
where R^1 is an aromatic radical having about 6–30 carbon atoms, M is an alkali metal and a is 1 or 2, with (B) at least one substituted imide having the formula



(II)

wherein Ar is an aromatic radical, R^2 is hydrogen or a hydrocarbon-based radical having about 1–13 carbon atoms and X^1 is halo or nitro;

the improvement which comprises using as said phase transfer catalyst (C) at least one bis-quaternary salt having the formula



(III)

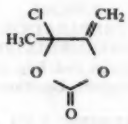
wherein each R^3 is independently a divalent hydrocarbon-based radical and all R^3 radicals taken together have about 4–12 carbon atoms, each R^4 is independently an n-alkyl radical having 4–6 carbon atoms, Q is nitrogen or phosphorus, X^2 is an anion-forming atom or radical, k is an integer from 1 to 3, and m is 4-k; at least three of the R^3 and R^4 radicals attached to each Q atom being aliphatic or alicyclic.

4,554,358
4-CHLORO-4-METHYL-5-METHYLENE-1,3-DIOXOLANE-2-ONE

Yasushi Takebe, Tondabayashi; Koji Iuchi, Nara, and Goro Tsukamoto, Toyonaka, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

PCT No. PCT/JP84/00304, § 371 Date Nov. 16, 1984, § 102(e) Date Nov. 16, 1984, PCT Pub. No. WO85/00037, PCT Pub. Date Jan. 3, 1985
PCT Filed Jun. 11, 1984, Ser. No. 675,922
Claims priority, application Japan, Jun. 14, 1983, 58-107336
Int. Cl.[4] C07D *317/36*
U.S. Cl. 549—229 1 Claim

1. 4-chloro-4-methyl-5-methylene-1,3-dioxolane-2-one of the formula:

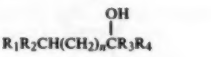


4,554,359
3-SUBSTITUTED PENTANEDIOIC ACIDS AND DERIVATIVES THEREOF

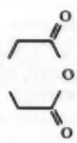
Harman S. Lowrie, Northbrook, and John S. Baran, Winnetka, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Jan. 9, 1984, Ser. No. 569,007
Int. Cl.[4] C07D *309/10*; C07C *59/01, 69/675*
U.S. Cl. 549—231 7 Claims

1. A compound of the formula:



wherein R_1 is t-butyl; wherein R_2 is hydrogen; wherein R_3 is $CH_2CO_2R_5$ and wherein R_4 is CH_2CO_2H, or wherein R_3 and R_4 are taken together to form a group as follows:



wherein R_5 is:

(a) hydrogen; or

(b) alkyl of 1 to 6 carbon atoms, inclusive; and

wherein n is an integer such that the total number of carbon atoms in $R_1R_2CH(CH_2)_n$ totals 18 to 22.

4,554,360
PROCESS FOR CONVERTING AROMATIC COMPOUNDS

Yasuo Yamazaki, Machida; Takehiko Suzuki, Tokyo; Isoo Shimizu, and Yasuo Matsumura, both of Yokohama, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Japan

Filed Mar. 29, 1984, Ser. No. 594,678
Claims priority, application Japan, Mar. 29, 1983, 58-51584
Int. Cl.[4] C07D *307/32*
U.S. Cl. 549—261 8 Claims

1. A process for converting an aromatic compound to prepare an iodoarene, Ar—I, and an aryl compound which is a compound wherein an unsaturated compound is bonded directly to an aryl group, Ar, which process comprises reacting a diaryliodonium salt represented by general formula (I)

$$[Ar—I^{\oplus}—Ar]X^{\ominus} \quad (I)$$

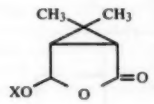
wherein Ar is an aryl group which may be substituted and two Ar's are identical and $X^{\ominus}$ is a counter ion inert to the reaction with the unsaturated compound in a solvent in the presence of a transition metal catalyst and a base or a reducing metal, said reaction being carried out at a temperature not higher than 80° C. and/or by using at least one of the base, the reducing metal and the unsaturated compound in an amount not more than 1.5 times the stoichiometric amount, then separating the iodoarene thus formed, Ar—I, from the reaction mixture, subsequently coupling said iodoarene thus separated with an aromatic compound, ArH, in an oxidizing atmosphere in the presence of $X^{\ominus}$ or an anion ion-exchangeable with $X^{\ominus}$, if needed ion-exchanging the anion with $X^{\ominus}$, to form the diaryl iodonium salt of the above general formula (I), and recycling said diaryl iodonium salt thus formed in said reaction.

4,554,361
PROCESS FOR THE PREPARATION OF A BICYCLIC LACTONE THROUGH A SULFONATED DERIVATIVE

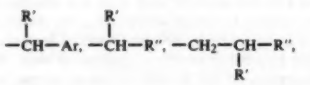
Jacques Martel, Bondy; Jean Tessier, Vincennes, and Jean-Pierre Demoute, Montreuil-sous-Bois, all of France, assignors to Roussel Uclaf, Paris, France

Continuation of Ser. No. 359,294, Mar. 18, 1982, abandoned, Continuation-in-part of Ser. No. 173,402, Jul. 29, 1980, Pat. No. 4,331,605. This application Jul. 27, 1983, Ser. No. 517,794
Claims priority, application France, Aug. 10, 1979, 79 20477
Int. Cl.[4] C07D *307/77*
U.S. Cl. 549—302 11 Claims

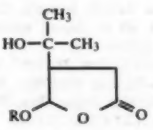
1. A process for the preparation of a compound of the configuration (1R,4RS,5SR) or (1S,4S,5R) or (1R,4R,5S) having the formula



wherein X is selected from the group consisting of hydrogen and R, R is the residue of an alcohol of the formula —R—OH wherein R is selected from the group consisting of chiral



unsymmetrical cycloalkyl of 4 to 10 carbon atoms and unsymmetrical aralkyl groups of 8 to 15 carbon atoms, achiral alkyl of 1 to 5 carbon atoms, achiral alkyl of 1 to 5 carbon atoms interrupted with at least one heteroatom selected from the group consisting of —O—, —S— and —N— and achiral alkyl of 1 to 5 carbon atoms substituted with at least one member of the group consisting of fluorine, chlorine, bromine and $—NO_2$, aralkyl and aralkyl substituted by alkoxy or aryloxy containing 7 to 15 carbon atoms, R′ and R″ are alkyl of 1 to 8 carbon atoms, Ar is an aryl of 6 to 8 carbon atoms comprising (a) reacting a compound with the trans form in the 4- and 5-positions of the formula



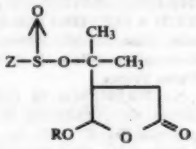
II

wherein R has the above definition and when R is a residue of

an achiral alcohol ROH as defined above, it has a (4SR,5RS) configuration and when R is a residue of a chiral alcohol R—OH as defined above, it has a (4S,5R) or (4R,5S) configuration, with a compound of the formula

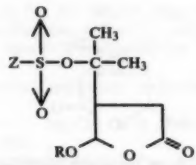
III

wherein Z is selected from the group consisting of alkyl of 1 to 4 carbon atoms, cycloalkyl of 3 to 6 carbon atoms and monocyclic aryl and alkyl of 1 to 4 carbon atoms, cycloalkyl of 3 to 6 carbon atoms and monocyclic aryl, all substituted with at least one member of the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen and nitro, n is 1 or 2 and the wavy line represents one or 2 semipolar bonds attaching the oxygen and sulfur atoms depending on whether n is 1 or 2, to obtain when n is 1, a compound with a trans form in the 4- and 5-positions of the formula



IV

and reacting the latter with an oxidizing agent capable of oxidizing sulfoxide to sulfone to obtain the corresponding compound of the formula



V

with the trans form in the 4- and 5-positions and the (4SR,5RS) configuration if R is a residue of an achiral alcohol ROH or the (4S,5R) or (4R,5S) configuration if R is a residue of a chiral alcohol R—OH or to obtain, when n is 2, the above compound of formula I, (b) reacting the compound of formula I with an alkali metal hydroxide to effect cyclization with retention of the configuration of the 4- and 5-carbon atoms, to obtain a compound of formula V with (1RS,4RS,5SR) configuration when the compound of formula I has (4SR, 5RS) configuration, or a compound of formula V with (1S,4S,5R) configuration, when the compound of formula I has (4R,5S) configuration or a compound of formula V with (1R,4R,5S) configuration when the compound of formula I has (4S,5R) configuration and (c), if desired, hydrolyzing the compound of formula I wherein when X is R, in an acid media, to obtain the compound of formula V with the same configuration wherein X is hydrogen.

4,554,362

BIS-CROWN-ETHER DERIVATIVES AND THEIR USE

Toshiyuki Shono, Suita; Keiichi Kimura, Osaka, and Takumi Maeda, Nishinomiya, all of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

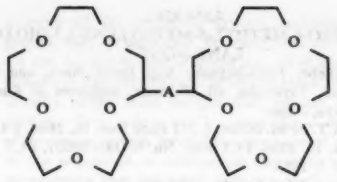
Division of Ser. No. 508,578, Jun. 28, 1983, Pat. No. 4,523,994. This application Mar. 4, 1985, Ser. No. 707,691

Claims priority, application Japan, Jun. 30, 1982, 57-114934

Int. Cl.[4] C07D *323/00*

U.S. Cl. 549—352 **9 Claims**

1. A bis-crown-ether derivative of the general formula:



in which A represents a divalent organic group which is able to assume a configuration such that the two crown rings can overlap spatially and hold a monovalent metal ion having an ionic radius of 1.3–2.1 Å between them.

4,554,363

PROCESS FOR THE PREPARATION OF CARBACYCLIN INTERMEDIATES

Helmut Vorbrueggen, Berlin, Fed. Rep. of Germany, assignor to Schering Aktiengesellschaft, Bergkamen, Fed. Rep. of Germany

PCT No. PCT/DE 82/00205, § 371 Date Jun. 23, 1983, § 102(e) Date Jun. 23, 1983, PCT Pub. No. W083/01449, PCT Pub. Date Apr. 28, 1983

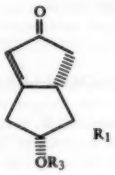
PCT Filed Jun. 23, 1983, Ser. No. 516,602

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1981, 3142733

Int. Cl.[4] C07D *309/12*; C07C *45/48*

U.S. Cl. 549—415 **8 Claims**

1. A process for the preparation of a bicyclic ketone containing blocked hydroxy groups of the formula

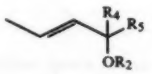


wherein

R_1 is

(a)—CH_2OR_2 wherein R_2 is benzyl, dimethyl-tert-butylsilyl, diphenyl-tert-butylsilyl, dimethylphenylsilyl, tribenzylsilyl, or tetrahydropyranyl;

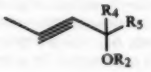
(b)



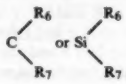
wherein R_2 is as defined above, R_4 is hydrogen or methyl, and R_5 is alkyl, alkenyl or alkynyl, each optionally substituted by fluorine, chlorine, 1,2-methylene, 1,1-trimethylene, or methoxy, or R_5 is benzyl or p-chlorobenzyl;

(c) —CH_2—X-Aryl wherein X is CH_2 or O and Aryl is phenyl or an aromatic heterocyclic ring of 5 or 6 ring atoms one of which is a hetero atom which is O, N or S bound to X via a 2-, 3- or 4-position of the heterocyclic ring, each of which aryl groups optionally is substituted by methyl, methoxy, fluorine, chlorine, bromine, or trifluoromethyl; or

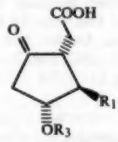
(d)



wherein R_2, R_4, and R_5 are as defined above; and
R_3 has one of the meanings given for R_2, it being possible for R_3 to be identical to R_2 or different from R_2 or to represent, jointly with R_2, the grouping



wherein R_6 and R_7 are the same or different and each is hydrogen, alkyl, or cycloalkyl,
comprising reacting a keto acid containing blocked hydroxy groups of the formula



with triphenyl(phenyliminovinylidene)phosphorane in an aprotic solvent with the exclusion of moisture and then reacting the resultant product with an alcohol in an absolute, aprotic solvent.

4,554,364
PRODUCTION OF 2-HYDROXYALKYL-1,3-DIOXOLANES

John R. Sanderson; Ernest L. Yeakey, both of Austin, and Jiang-Jen Lin, Round Rock, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 19, 1984, Ser. No. 683,547
Int. Cl.⁴ C07D *317/00*
U.S. Cl. 549—453 **6 Claims**

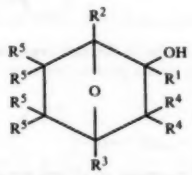
1. A method for the preparation of 2-hydroxyalkyl-1,3-dioxolanes which comprises reacting 1,3-dioxolane with formaldehyde and a cobalt compound in the presence of tert-butyl hydroperoxide.

4,554,365
PROCESS FOR PREPARING OXABICYCLOALKANE COMPOUNDS

Albertus J. Mulder, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

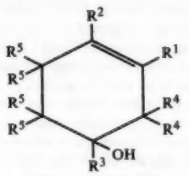
Filed Jul. 30, 1984, Ser. No. 635,784
Claims priority, application United Kingdom, Aug. 12, 1983, 8321713
Int. Cl.⁴ C07D *493/08*
U.S. Cl. 549—463 **15 Claims**

1. A process for preparing an oxabicycloalkane compound of formula



(I)

wherein R^1 is a hydrogen atom or C_{1-6} alkyl group optionally substituted by up to 3 fluorine, chlorine and/or bromine atoms; R^2 is a hydrogen atom or a C_{1-6} straight-chain alkyl group; R^3 is a hydrogen atom; or C_{1-10} alkyl group; a cyano group; an alkyl group substituted by one or more halogen atoms or by a hydroxy group, a cyano group, a C_{1-6} alkoxy group, an aryloxy group, a C_{1-6} alkylsuulphonyl group, an arylsulphonyl group an aralkylsulphonyl group, an azido group, a C_{1-6} alkoxycarbonyl group, an aralkoxy carbonyl group, a hydroxycarbonyl group, a phosphoryl group, a phosphoryloxy group, or an amine oxide, carbamoyl or thiocarbamoyl group in which each nitrogen is substituted by hydrogen or by 1 or 2 C_{1-4} alkyl groups; a C_{2-4} alkenyl or alkynyl group; an aryl or aralkyl group, each containing from 6 to 11 carbon atoms including 1 to 4 carbom atoms in the alkyl portion and optionally ring substituted by one or more fluorine, chlorine and/or bromine atoms or by a C_{1-2} alkyl or alkoxy group, each optionally substituted by one or more fluorine and/or chlorine atoms; a group $—CSNH_2$; a group $—CO_2R^6$ or $—CON(R^6)_2$ in which R^6 is a hydrogen atom or a C_{1-6} alkyl group; or a C_{1-6} acyl group or an oxime or an acetal derivative of said acyl group; each R^4 is independently a hydrogen atom; an alkyl group optionally substituted by up to 3 halogen atoms; a hydroxy group; or a C_{1-4} alkoxy group; and each R^5 independently is a hydrogen atom, a C_{1-4} alkyl group optionally substituted by up to 3 halogen atoms; or a chlorine or bromine atom; which process comprises treating a liquid-phase mixture of a compound of formula



(II)

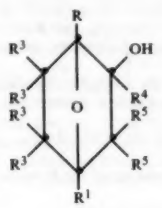
wherein R^1, R^2, R^3, R^4 and R^5 are as defined above, an aldehyde containing at least two carbon atoms and a suitable solvent, with oxygen in the presence of a catalyst which is soluble in the reaction mixture and which comprises a praseodymium compound and at least one compound selected from compounds of molybdenum, niobium, tantalum, tungsten, uranium and vanadium.

4,554,366
CERTAIN SUBSTITUTED, 7-OXABICYCLO[2.2.1]HEPTAN-2-OLS AND -2-ONES AS INTERMEDIATES

George B. Payne; Samuel B. Soloway, both of Modesto; James E. Powell, Ripon, all of Calif.; Steven A. Roman, Fulshear, Tex., and Willy D. Kollmeyer, Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

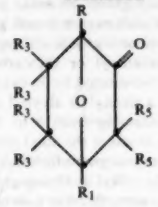
Division of Ser. No. 416,572, Sep. 13, 1982, , which is a continuation-in-part of Ser. No. 331,094, Dec. 16, 1981, abandoned. This application Jun. 25, 1984, Ser. No. 624,550
Int. Cl.⁴ C07D *307/00*
U.S. Cl. 549—463 **12 Claims**

1. A compound of the formula Id or Ie



Id

-continued



Ie

wherein

R is a hydrogen atom; or a straight-chain alkyl group containing from 1 to 6 carbon atoms;

R^1 is a hydrogen atom; or is an alkyl group containing from 1 to 10 carbon atoms optionally substituted by up to 3 halogen atoms, each having an atomic number of from 9 to 35, inclusive, or by a hydroxy group, a cyano group, an alkoxy group containing from 1 to 4 carbon atoms, a C_{1-6} alkylsulfonyl group, a C_{6-10} arylsulfonyl group, a C_{7-11} aralkylsulfonyl group, an azido group, a C_{1-6} alkoxycarbonyl group, a hydroxycarbonyl group, a dialkoxyphosphonyl group, a dialkylamine oxide group, a carbamoyl group or a thiocarbamoyl group substituted by hydrogen or 1 or 2 alkyl groups containing from 1 to 4 carbon atoms; or R^1 is an alkenyl or alkynyl group containing from 2 to 4 carbon atoms; or is an aryl or aralkyl group, each containing from 6 to 10 carbon atoms, and 1 to 4 carbons in the alkyl portion, each optionally ring-substituted by one or more substituents independently selected from a halogen atom, each having an atomic number of from 9 to 35, inclusive, or by an alkyl or alkoxy group containing from 1 to 2 carbon atoms, each optionally substituted by one or more halogen atoms, each having an atomic number of 9 or 17, or R^1 is a group $—CO_2R^6$ or $—CON(R^6)$ in which R^6 is a hydrogen atom, or an alkyl group containing from 1 to 6 carbon atoms;

each R^3 is independently selected from a hydrogen atom, a chlorine atom, a bromine atom, or an alkyl group containing from 1 to 4 carbon atoms optionally substituted by up to 3 halogen atoms, each having an atomic number of from 9 to 35, inclusive, or two of R^3 when located on adjacent carbon atoms together form an epoxide ring or a carbon-carbon bond;

R^4 is a hydrogen atom or an alkyl group containing from 1 to 4 carbon atoms optionally substituted by up to 3 halogen atoms having an atomic number of from 9 to 35, inclusive;

each R^5 is independently selected from a hydrogen atom or an alkyl group containing from 1 to 4 carbon atoms optionally substituted by up to 3 halogen atoms having an atomic number of from 9 to 35, inclusive; or a hydroxy group;

with the proviso that R and R^1 are not both hydrogen atoms and in formula Id, when R is methyl and R^3, R^4 and R^5 all are hydrogen atoms, then R^1 is other than isopropyl;

and stereoisomeric forms or mixtures thereof.

4,554,367

PHOSPHONIUM ORGANOHALOGENOSTANNATES-IV

Wolfgang Wehner, Zwingenberg, and Reinhardt Grade, Bensheim, both of Fed. Rep. of Germany, assignors to Ciga-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 26, 1983, Ser. No. 535,528

Claims priority, application Switzerland, Oct. 6, 1982, 5875/82

Int. Cl.⁴ C07F 7/22

U.S. Cl. 556—20 **5 Claims**

1. A phosphonium stannate of the formula I

$$[(R^1)_a(R^2)_bP]_n{}^{\oplus}[R_q{}^3SnX_rY_t]_w{}^{n\ominus} \quad \text{(I)},$$

in which R^1 and R^3 are n-butyl, R^2 is C_{12}–C_{16}-alkyl, X and Y independently of one another are fluorine or chlorine, n is 1 or 2, q is 1, 2 or 3, a is 3 or 4, the value 4 only being permitted if X and/or Y are fluorine, b is 1 or 4, the value 4 only appearing if X and/or Y are fluorine, the sum (a+b) must always be 4, r and t are integers from 0 to 5, the sum (r+t) being 2 to 5 and the sum (q+r+t) corresponding to the value (n+4) and w is 1.

4,554,368

CONTINUOUS PROCESS FOR THE PREPARATION OF ALKYLTIN THIOCARBOXYLIC ACID ESTERS

Rudolf Maul, Lorsch; Hans Stephan, Bensheim, and Walter Wolf, Lautertal, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 1, 1982, Ser. No. 445,812

Int. Cl.⁴ C07F 7/22

U.S. Cl. 556—91 **13 Claims**

1. A process for the production of alkyltin thiocarboxylic acid esters from alkyltin halides and thiocarboxylic acid esters in the presence of an acid acceptor, which process comprises carrying out the reaction continuously in a reaction system comprising 2 to 5 agitator vessels with an average dwell time of 1 to 60 minutes, at a constant pH value in the range from 3 to 8, and in a temperature range from 40° to 80° C.

4,554,369

ORGANOSILICON COMPOUNDS AND PREPARATION AND USE THEREOF

Michael P. Hill, Saint Lythans, Wales, and Gilbert H. Pittet, Coppet, Switzerland, assignors to Dow Corning Ltd., Barry, Wales

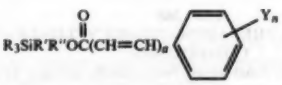
Filed Aug. 16, 1984, Ser. No. 641,523

Int. Cl.⁴ C07F 7/08, 7/10, 7/18

U.S. Cl. 556—418 **9 Claims**

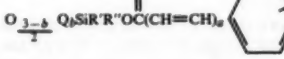
1. Organosilicon compounds which are

(1) silanes represented by the general formula



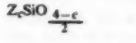
or

(2) organosiloxanes having at least one unit represented by the general formula



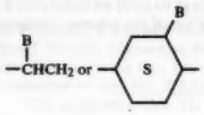
(i)

any other units present in the said organosiloxanes being those represented by the general formula

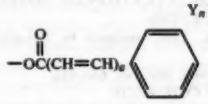


(ii)

wherein each R represents an alkoxy group or an alkoxyalkoxy group having less than 8 carbon atoms, an alkyl group having from 1 to 4 inclusive carbon atoms, a vinyl group or a phenyl group, R′ represents a divalent hydrocarbon group composed of carbon, hydrogen and, optionally, oxygen present in the form of ether linkages, R″ represents the group



in which B represents —OH or, except when Y is —OH or NH_2, is Cl or the group



a and n are each 0 or 1, Y when present being —OH or an alkoxy group having from 1 to 4 carbon atoms when a is 1 and —OH or NX_2, wherein X represents hydrogen or an alkyl group having from 1 to 4 carbon atoms, when a is zero, Q represents a hydroxyl group, an alkoxy or alkoxyalkoxy group having less than 8 carbon atoms, a methyl group or a phenyl group, Z represents a hydrogen atom, a monovalent hydrocarbon group or a monovalent halogenated hydrocarbon group, b is 0, 1 or 2 and c is 0, 1 or 3.

4,554,370
METHOD FOR MAKING ALKYLHALOSILANES

William J. Ward, III, Schenectady; Alan Ritzer, Sand Lake, and Heine Lapidot, Latham, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 29, 1984, Ser. No. 665,878
Int. Cl.[4] C07F 7/16
U.S. Cl. 556—472 **3 Claims**

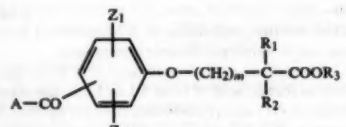
1. A method for making alkylhalosilanes in a fluid bed reactor which comprises, effecting contact between alkylhalide and powdered silicon in the presence of a copper-silicon contact mass which is generated in situ in the reactor by introducing into the fluid bed reactor, under continuous conditions, a mixture comprising 100 parts of powdered silicon, 0.001 to 0.2 part of fumed silica, and 0.1 to 20 parts of cuprous chloride.

4,554,371
PHENOXYALKYLCARBOXYLIC ACIDS

Bernard Majoie, Dijon, France, assignor to Societe de Recherches Industrielles S.O.R.I., Paris, France

Continuation of Ser. No. 415,181, Sep. 7, 1982, which is a continuation of Ser. No. 151,769, May 21, 1980, which is a division of Ser. No. 42,156, May 24, 1979, Pat. No. 4,238,492. This application Aug. 2, 1984, Ser. No. 637,062
Claims priority, application United Kingdom, May 31, 1978, 25621/78
Int. Cl.[4] C07L 69/76
U.S. Cl. 560—52 **17 Claims**

1. A compound selected from the group consisting of those of formula I



I

wherein

A is selected from the group consisting of phenyl and phenyl substituted by 1, 2, or 3 substituents independently selected from the group consisting of fluorine, chlorine, bromine, trifluoromethyl, nitro, hydroxy, C_{1-4}alkyl and C_{1-4}alkoxy;

R_1 and R_2 are each methyl;

R_3 is selected from the group consisting of hydrogen and C_{1-4} alkyl; m is 3 or 4;

Z_1 and Z_2 are the same or different and are each selected from the group consisting of hydrogen, chlorine, and methyl; and

the A—CO— and —O—$(CH_2)_m$—CR_1R_2—$COOR_3$ groups are in the relative meta or para positions;

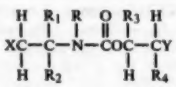
and non-toxic salts thereof.

4,554,372
PREPARATION OF CARBAMATES

James M. Renga, Walnut Creek; Roy A. Periana-Pillai, Berkeley, both of Calif., and Kevin A. Frazier, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 498,223, May 26, 1983, abandoned. This application Aug. 21, 1984, Ser. No. 642,860
Int. Cl.[4] C07C 125/065
U.S. Cl. 560—161 **6 Claims**

1. A process for the preparation of 2-substituted alkyl (2-substituted alkyl)-carbamates corresponding to the formula:

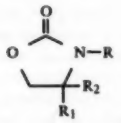


wherein

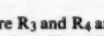
X and Y are halo, providing that if X and Y are not the same halo the V is the more electronegative halo,

R, R_1 and R_2 are independently hydrogen or C_{1-10} alkyl or alkoxyalkyl; and

R_3 and R_4 are independently hydrogen or C_{1-4} alkyl or haloalkyl and together may form a C_{3-4} alkylene group, comprising contacting an oxazolidone corresponding to the formula:



wherein R, R_1 and R_2 are as previously defined, with an olefin corresponding to the formula:



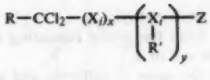
where R_3 and R_4 are as previously defined and an electrophile XY where X and Y are as previously defined at a temperature from about 25° C. to about 100° C.

4,554,373
METHOD OF PREPARING TELOMERS WHICH CAN BE CROSS-LINKED BY LIGHT

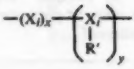
Bernard Boutevin, Montpellier; Willy-Jean Deiss, Grenoble; Marc Maliszewicz, Montpellier, and Yves Pietrasanta, Meze, all of France, assignors to Societe de Vente de l'Aluminium Pechiney, Paris, France

Division of Ser. No. 474,672, filed as PCT FR 82/00122, on Jul. 20, 1982, published as WO 83/00336, Feb. 3, 1983, § 102(e) date Mar. 7, 1983, Pat. No. 4,518,794.
This application Nov. 5, 1984, Ser. No. 668,147
Claims priority, application France, Jul. 22, 1982, 82 14789
Int. Cl.[4] C07C 69/533
U.S. Cl. 560—192 **10 Claims**

1. A method of preparing telomers of the general formula



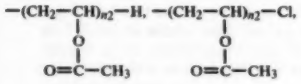
wherein the sequence of

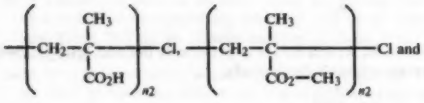


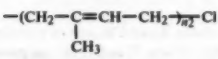
links emanates from identical taxogen X_i with a free function, selected from the group consisting of primary alcohol, acid and secondary alcohol functions, and where the

links correspond to the esterified form of X_i, R' being the radical of the group used for esterification, $RCCl_2$— and —Z being the parts of the telogen $RCCl_2Z$ where —Z is selected from the group consisting of —H, —Cl and —Br radicals, wherein X_i belongs to the group made up of sub-groups X_1, X_2, X_3, X_4 in which X_1 is selected from the group consisting of 2-hydroxy ethyl acrylate and 2-hydroxy ethyl methacrylate, X_2 is selected from the group consisting of acrylic acid and methacrylic acid, X_3 is vinyl alcohol, X_4 is allyl alcohol, $0<x\leqq 500$, $1<y\leqq 500$, $1<x+y\leqq 1000$, wherein the group used for esterification has at least one double bond which can be cross-linked by light and is selected from the group consisting of acids and acid chlorides in the case of X_1, X_3 and X_4 and is an alcohol in the case of X_2 and

when X_i is X_1, R is selected from the group consisting of Cl, CH_3OCO, CF_3 $(CF_2—CFCl)_{n1}$—Cl where $1\leqq n_1\leqq 10$,



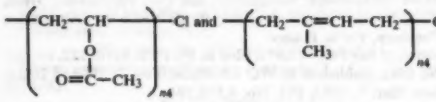




where $1\leqq n_2\leqq 500$;

when X_i is X_2, R is selected from the group consisting of Cl, CF_3 and $(CF_2—CFCl—)_{n3}Cl$ where $1\leqq n_3\leqq 10$;

when X_i is X_3, R is selected from the group consisting of Cl, $(C_2H_5O—)_2PO$,



where $1\leqq n_4<500$; and

when X_i is X_4, R is selected from the group consisting of $CCl_2—CO_2H$, $CCl_2—CO_2CH_3$, CCl_3 and $(C_2H_5O—)_2—PO$-comprising telomerizing said taxogens X_i with said telogen $RCCl_2Z$ in the presence of a catalyst, then esterifying said telomer product so as to graft an unsaturated group onto the links of the sequence of the telomer obtained.

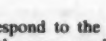
4,554,374

PROCESS FOR DICARBONYLATION OF SIMPLE OLEFINS

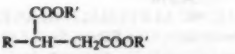
Jiang-Jen Lin, Round Rock, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Aug. 27, 1984, Ser. No. 644,416
Int. Cl.[4] C07C *67/38*
U.S. Cl. 560—204 **6 Claims**

1. A process for oxidative carbonylation of 1-olefins containing 2 to 12 carbon atoms per molecule of the formula:



wherein R is a hydrogen or hydrocarbon radicals, by reaction with carbon monoxide and oxygen in the presence of an alkanol coreactant containing 1 to 20 carbon atoms per molecule, to form an aliphatic dicarboxylic acid ester having the formula:



wherein R' is a alkyl group from an alkanol coreactant, said process being conducted in the presence of a hetergeneous supported palladium catalyst, a copper-containing cocatalyst, a lithium-containing cocatalyst and 2,2-dimethoxypropane, at a temperature of 80° to 150° C. and a pressure of 500 psi to 1800 psi, in order to effect the desired carbonylation reaction, and wherein the carbon monixide to oxygen ratio is from 5:1 to 20:1, the palladium catalyst is deposited on said support in a concentration range of 0.1 to 20 wt. %, the concentration of copper-containing cocatalyst is between 0.1% wt% and 50 wt. % and the concentration of lithium-containing cocatalyst is between 0.0001 wt. % and 1.0 wt. %.

4,554,375

CO-PREPARATION OF 2,7-OCTADIENYL FORMATE, 1,6-OCTADIENE AND 4 VINYLCYCLOHEXENE FROM BUTADIENE USING A PLATINUM CATALYST

Jiang-Jen Lin, Round Rock, and David C. Alexander, Austin both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 15, 1984, Ser. No. 589,804
Int. Cl.[4] C07C *67/04*
U.S. Cl. 560—244 **2 Claims**

1. A method for the preparation of 2,7-octadienyl formate, 1,6-octadiene and 4-vinylcyclohexene comprising

reacting 1,3-butadiene with formic acid at a mole ratio of butadiene to formic acid of from 5:1 to 1:5 in the presence of a platinum (II) acetyl acetonate catalyst optionally in the presence of a solvent from the group consisting of oxygenated solvents and aromatic solvents at a temperature in the range between 50° to 150° C. and at a CO_2 partial pressure between about 50 and 500 psi where the mole ratio of butadiene to platinum catalyst ranges from 10,000:1 to 1,000:1.

4,554,376

METHOD FOR SEPARATING AND PURIFYING AMINO ACID

Teruo Fujimoto; Yoshinobu Isono, both of Nagaoka, and Yoshiyuki Miyaki, Shinnanyo, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Continuation of Ser. No. 371,312, Apr. 23, 1982, abandoned. This application Oct. 11, 1984, Ser. No. 659,861
Claims priority, application Japan, May 7, 1981, 56-67612
Int. Cl.[4] C07C *99/12*
U.S. Cl. 562—554 8 Claims

1. A method for purifying an amino acid comprising performing piezo-dialysis of a mixture containing said amino acid and a substance other than said amino acid to produce the purified amino acid, said piezo-dialysis being carried out using an amphoteric ion exchange membrane composed of a ternary block copolymer having a molecular structure in which a macromolecule having a cation exchange group, a macromolecule having an anion exchange group and a macromolecule having no ion exchange group are linked together to form a straight chain and in which the macromolecule having the cation exchange group are separated from each other by the macromolecule having no ion exchange group with the segments of the macromolecules having one of the following sequences, poly A-poly C-poly B; poly C-poly A-poly C-poly B-poly C; poly A-poly C-poly B-poly C and poly C-poly A-poly C-poly B wherein the segment having the cation exchange group is poly A, the segment having the anion exchange group poly B and the neutral segment is poly C.

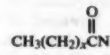
4,554,377

PRODUCTION OF N-VINYL CARBOXYLIC ACID AMIDES

Robert W. Stackman, Morristown, N.J.; Richard H. Summerville, deceased, late of W. Orange, N.J., and James E. Summerville, Jr., heir, Signal Mountain, Tenn., assignors to Celanese Corporation, New York, N.Y.

Filed Jul. 16, 1984, Ser. No. 631,047
Int. Cl.[4] C07C *103/133, 102/00*
U.S. Cl. 564—205 13 Claims

1. A process for the preparation of N-α-alkoxy-ethyl-carboxylic acid amides which comprises reacting dimethyl acetal in the presence of an acid catalyst with a carboxylic acid amide having the formula:



$$CH_3(CH_2)_xCNH_2$$

wherein x is 0 or an integer up to and including 9 and wherein the molar ratio of dimethyl acetal to carboxylic acid amide is from about 2 to 60:1 to produce an N-α-alkoxy-carboxylic acid amide.

4,554,378

PROCESS FOR PREPARING POLYAMINES WITH ION EXCHANGE RESIN CATALYSTS

John L. Nafziger, Lake Jackson; Laura A. Rader, Clute, and Irwin J. Seward, Jr., Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 22, 1983, Ser. No. 468,217
Int. Cl.[4] C07C *87/50*
U.S. Cl. 564—332 8 Claims

1. A process for continuously preparing aromatic polyamines which process comprises

(A) preparing a precondensate by reacting

(1) distilled oxygen-free aromatic amine with

(2) aliphatic aldehyde, aldehyde releasing material or ketone;

(B) removing a sufficient amount of water from the precondensate produced in step (A) such that there remains a single phase containing a sufficient quantity of water to maintain moisture in the ion exchange resin catalyst;

(C) passing said liquid single phase precondensate first through a "guard column" and then through at least one plug flow reactor containing at least one strong acid cation exchange resin selected from

(1) gelatinous ion exchange resins based on styrene-divinylbenzene copolymers containing not more than 2 weight percent divinylbenzene in said copolymer and

(2) macroporous ion exchange resins based on styrene-divinylbenzene copolymers containing at least 10 weight percent divinylbenzene in said copolymer; and

(D) thereafter recovering the resultant aromatic polyamines from the reaction mixture by suitable means; and

wherein

(a) in step (A), the mole ratio of 1 to 2 is from about 2:1 to about 10:1;

(b) the temperature in step (A) is from about 0° C. to about 120° C.;

(c) the temperature employed in step (C) is from about 35° C. to about 135° C.;

(d) steps (A), (B) and (C) are conducted in an essentially oxygen-free atmosphere;

(e) said ion exchange resin employed in step (C) has been preconditioned by flowing therethrough several volumes of a suitable organic solvent or aqueous mixtures of such solvent to condition the ion exchange resin bed so as to prevent channeling during operation of the process; and

(f) said "guard column" contains activated charcoal or an ion exchange resin in an amount of about 1% to about 10% of the volume of ion exchange resin employed in step (C).

6. A process for continuously preparing aromatic polyamines which process comprises

(A) preparing a precondensate by reacting

(1) distilled oxygen-free aromatic amine with

(2) aliphatic aldehyde, aldehyde releasing material or ketone;

(B) removing a sufficient amount of water from the precondensate produced in step (A) such that there remains a single phase containing a sufficient quantity of water to maintain moisture in the ion exchange resin catalyst;

(C) passing said liquid single phase precondensate through at least one plug flow reactor containing at least one strong acid cation exchange resin selected from

(1) gelatinous ion exchange resins based on styrene-divinylbenzene copolymers containing not more than 2 weight percent divinylbenzene in said copolymer and

(2) macroporous ion exchange resins based on styrene-divinylbenzene copolymers containing at least 10 weight percent divinylbenzene in said copolymer; and

(D) thereafter recovering the resultant aromatic polyamines from the reaction mixture by suitable means; and

wherein

(a) in step (A), the mole ratio of 1 to 2 is from about 2:1 to about 10:1;

(b) the temperature in step (A) is from about 0° C. to about 120° C.;

(c) the temperature employed in step (C) is from about 35° C. to about 135° C.;

(d) steps (A), (B) and (C) are conducted in an essentially oxygen-free atmosphere; and

(e) said ion exchange resin employed in step (C) has been preconditioned by flowing there-through several volumes of a suitable organic solvent or aqueous mixtures of such solvent to condition the ion exchange resin bed so as to prevent channeling during operation of the process.

4,554,379
AMINOALKYL AROMATIC COMPOUNDS AND THEIR PRODUCTION

Frederick H. Howell, Atherton, England, assignor to Ciba Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 663,263, Oct. 22, 1984, abandoned, which is a continuation of Ser. No. 609,517, May 11, 1984, abandoned, which is a continuation of Ser. No. 388,365, Jun. 14, 1982, abandoned. This application Apr. 18, 1985, Ser. No. 724,494

Claims priority, application United Kingdom, Jun. 19, 1981, 8119008

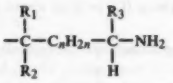
Int. Cl.[4] C07C *91/16*; C08G *69/26*

U.S. Cl. 564—374 5 Claims

1. A compound having the formula I

$$R_4(QNH_2)_x \quad (I)$$

wherein x is 2 and the residues QNH_2 are the same or different and each is:



wherein n is an integer from 1 to 15, R_1 is C_1–C_8 alkyl, R_2 is C_1–C_4 alkyl or R_1 and R_2, together with the carbon atom to which they are attached, form a C_5–C_8 cycloalkylene residue, R_3 is C_1–C_6 alkyl, C_3–C_8 cycloalkyl or C_6–C_{10} aryl and R_4 is a polyvalent mononuclear C_6–C_{20} aromatic residue; as well as the corresponding salts of organic or inorganic acids.

4,554,380
PROCESS FOR THE MANUFACTURE OF O-TOLUIDINE AND/OR M-TOLUIDINE AND/OR P-TOLUIDINE

Hans-Jürgen Arpe, Frankfurt am Main, and Heinz Litterer, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 484,179, Apr. 12, 1983,. This application Aug. 27, 1984, Ser. No. 644,866

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1982, 3213876

The portion of the term of this patent subsequent to Oct. 30, 2001, has been disclaimed.

Int. Cl.[4] C07C *85/00*

U.S. Cl. 564—424 3 Claims

1. A method for making at least one member selected from the group consisting of o-toluidine, m-toluidine, and p-toluidine, which comprises contacting at least one toluidine isomer other than a toluidine isomer sought to be isolated with an isomerization catalyst selected from the group of synthetic zeolites of the pentasil type, the ions of which are exchanged, at a temperature from 250° C. to 500° C.

4,554,381
PROCESS FOR SULFONYLATION OF HALOBENZENES

Michel Desbois, Rillieux, France, assignor to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Jun. 28, 1982, Ser. No. 392,885

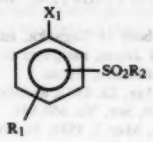
Claims priority, application France, Jan. 21, 1982, 82 00879

The portion of the term of this patent subsequent to Nov. 12, 2002, has been disclaimed.

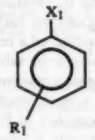
Int. Cl.[4] C07C *147/06*

U.S. Cl. 568—34 7 Claims

1. A process for the preparation of phenyl sulfones having the formula:



said process comprising reacting a halobenzene having the formula:



(I)

in a reaction vessel with a sulfonic acid, a precursor or a derivative thereof having the formula:

$$R_2SO_2X_2 \quad (II)$$

in the presence of boron trifluoride in an amount such that the absolute pressure of boron trifluoride within the reaction vessel exceeds 1 bar and in the presence of hydrofluoric acid as a solvent; wherein

X_1 is Cl, Br, I, or F;

R_1 is at least one element or moiety selected from the group consisting of hydrogen, OH, Cl, Br, I, F, alkyl and alkoxy radicals having from 1 to 6 carbon atoms, and phenyl and phenoxy radicals substituted by at least one group more deactivating than X_1;

X_2 is a halogen, OH, OR_3, NH_2, NHR_4, or NR_5R_6, wherein each of R_3, R_4, R_5, and R_6 is an aromatic or aliphatic radical; and

R_2 is an aliphatic or aromatic radical.

4,554,382
DEHYDRATING DECOMPOSITION PROCESS FOR PREPARING CARBONYL COMPOUND

Yoshihiro Tasaka; Toshihiro Nakamichi, both of Kamifukuoka, and Yutaka Katsuhara, Kawagoe, all of Japan, assignors to Central Glass Company Limited, Ube, Japan

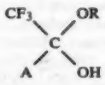
Filed Mar. 29, 1984, Ser. No. 595,038

Claims priority, application Japan, Mar. 30, 1983, 58-52668

Int. Cl.[4] C07C *45/52*

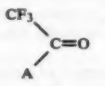
U.S. Cl. 568—404 5 Claims

1. A process of preparing a carbonyl compound, which is expressed by the general formula (II) and has a boiling point below room temperature under the atmospheric pressure, by dehydrating decomposition of a gem-diol, hemi-acetal or hemiketal expressed by the general formula (I),



(I)

where A represents H or CF_3, and R represents H, CH_3 or C_2H_5,



(II)

where A represents H or CF_3, the process being a two-stage process comprising:

(a) as the first stage, making said gem-diol, hemi-acetal or hemi-ketal contact with sulfuric acid at a temperature in the range from 90° to 140° C. so as to partly decompose and dehydrate said gem-diol, hemi-acetal or hemi-ketal, permitting the concentration of said sulfuric acid to become lower than 93% by weight but not lower than 65% by weight; and

(b) as the second stage, making the product of the reaction at step (a) contact with concentrated sulfuric acid at a temperature not higher than 60° C., preventing the concentration of said concentrated sulfuric acid from becoming lower than 93% by weight.

4,554,383

PROCESS FOR PRODUCING P-TOLUALDEHYDE FROM TOLUENE USING AN ALUMINUM HALIDE ALKYL PYRIDINIUM HALIDE 'MELT' CATALYST

John F. Knifton, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 20, 1984, Ser. No. 644,118

Int. Cl.⁴ C07C *45/49*

U.S. Cl. 568—428 **6 Claims**

1. A process for the selective carbonylation of toluene to p-tolualdehyde which comprises mixing an N-alkylpyridinium halide and an anhydrous aluminum halide melt catalyst with toluene and carbon monoxide at an ambient temperature of about 0° C. to 200° C. and at a pressure of about 1 atm to about 300 atm until the desired tolualdehyde is formed, and separating the desired product.

4,554,384

BICYCLO TERTIARY HYDROXYL CARBOXALDEHYDE

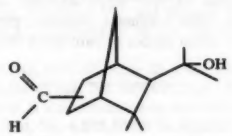
Futoshi Fujioka, Wanamassa; Richard M. Boden, Ocean, and William L. Schreiber, Jackson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 511,965, Jul. 8, 1983, Pat. No. 4,491,537. This application Oct. 1, 1984, Ser. No. 656,661

Int. Cl.⁴ C07C *47/347*

U.S. Cl. 568—445 **1 Claim**

1. A compound defined according to the structure:



4,554,385

TERTIARY HYDROXYL CARBOXALDEHYDES, ORGANOLEPTIC USES THEREOF, AND PROCESSES FOR PRODUCING SAME

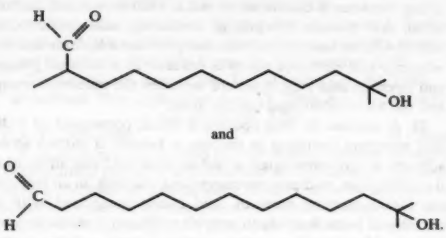
Futoshi Fujioka, Wanamassa; Richard M. Boden, Ocean, and William L. Schreiber, Jackson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 656,661, Oct. 1, 1984, , which is a division of Ser. No. 511,965, Jul. 8, 1983, Pat. No. 4,491,537. This application Mar. 8, 1985, Ser. No. 709,916

Int. Cl.⁴ C07C *47/19*

U.S. Cl. 568—496 **2 Claims**

1. A mixture of compounds defined according to the structures:



4,554,386

PROCESS FOR THE PREPARATION OF METHYL TERTIARY BUTYL ETHER

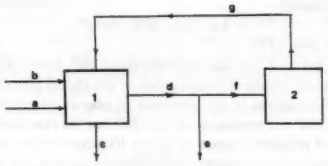
Christiaan Groeneveld, Ransdaal; Dirk Knol, Beek; Johannes D. M. Verstegen, Sittard, and Jacobus Jansen, Geleen, all of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Mar. 30, 1984, Ser. No. 595,165

Claims priority, application Netherlands, Apr. 1, 1983, 8301180; Apr. 28, 1983, 8301496

Int. Cl.⁴ C07C *41/06*

U.S. Cl. 568—697 **5 Claims**



1. In a process for the preparation of methyl tertiary butyl ether by contacting an isobutene-containing hydrocarbon feed, predominantly consisting of hydrocarbons with four carbon atoms, with methanol in a reaction zone in the presence of a catalyst and separating the methyl tertiary butyl ether thus formed from the reaction mixture, the improvement essentially comprising the combination of steps of:

carrying out a first reaction between isobutene contained in said hydrocarbon feed and methanol in a first reaction zone in the presence of a catalyst, and separating methyl tertiary butyl ether thus formed from a first residual hydrocarbon stream containing normal-butene;

introducing at least a portion of said residual hydrocarbon stream into an isomerization zone wherein at least a portion of the normal-butene introduced therein is converted to form a second residual hydrocarbon stream containing isobutene; and

introducing said second residual hydrocarbon stream, together with a further amount of methanol, into a second reaction zone, separate from said first reaction zone, wherein isobutene contained in said second residual hydrocarbon stream is reacted with said further amount of methanol in the presence of a catalyst to form a further amount of methyl tertiary butyl ether.

4,554,387

RING OPENING OF CYCLIC NITRO KETONES

Paul D. Seemuth, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 27, 1984, Ser. No. 604,891

Int. Cl.⁴ C07C *79/18*

U.S. Cl. 568—704 **28 Claims**

1. A process for ring opening a cyclic compound having a

ring structure of 7–30 ring members including a carbonyl group between a carbon atom and a nitro-substituted carbon atom, said process comprising contacting said cyclic compound with an anionic reactant that provides a hydride species whereby said carbonyl group is reduced to a carbinol group, and opening said ring structure between the carbonyl group and the nitro-substituted carbon atom.

21. A process for ring opening a cyclic compound of 7–30 ring members including in the ring a ketonic α carbon atom adjacent a nitro-substituted ω carbon atom; and also adjacent a β carbon atom, said process comprising reacting, in an innocuous liquid reaction medium, said cyclic compound with a quantity of metal hydride to provide sufficient hydride ions to reduce said carbonyl group to a carbinol group and cleave the ring between said carbonyl group and said nitro-substituted carbon atom.

4,554,388

PROCESS FOR ISOMERIZATION AND TRANSALKYLATION OF ALKYLPHENOLS

Karl-Heinz Keim, Heimerzheim, and Joachim Korff, Bornheim-Merten, both of Fed. Rep. of Germany, assignors to Rheinische Braunkohlenwerke Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Feb. 7, 1984, Ser. No. 577,849

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1983, 3304663

Int. Cl.⁴ C07C *39/07*

U.S. Cl. 568—716 **10 Claims**

1. A process for the isomerization and transalkylation by catalytically reacting methylated or ethylated phenols and/or phenolderivatives in the presence of phenol at temperature of 200° to 550° C., pressures of 1 to 300 bar (at reaction temperature) and residence times of 0,1 to 10 hours in the presence of metal oxides as catalyst, characterized in that the process is carried out in the presence of a catalyst comprising

(a) iron oxide (s)

(b) at least one oxide selected from at least one of the groups

1. B, Al, Ce
2. Si, Ge, Sn, Ti, Zr
3. Cr, V
4. Li, Na, K, Rb, Cs, Be, Mg, Ca. Sr, Ba, Mn, La

4,554,389

UNSYMMETRICAL DIPHENOLIC COMPOUNDS

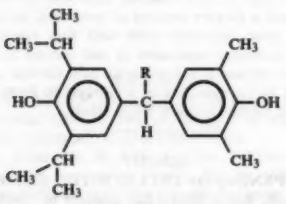
Kju Hi Shin, and Edward F. Tatum, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Apr. 9, 1984, Ser. No. 598,058

Int. Cl.⁴ C07C *39/12*

U.S. Cl. 568—722 **4 Claims**

1. A compound of structure I:



(I)

wherein R is H, alkyl or alkenyl of 1 to 7 carbon atoms, cycloaliphatic of 3 to 7 carbon atoms, aromatic of 6 to 10 carbon atoms, a 5 to 7 member heterocyclic ring, or a heteroatomic radical of 1 to 7 atoms other than H.

4,554,390

METHOD FOR HARVESTING ALGAE

Cyril C. Curtain, Williamstown, and Harvey Snook, Aspendale, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization and Betatene Limited, both of, Australia

PCT No. PCT/AU82/00165, § 371 Date Jun. 7, 1983, § 102(e) Date Jun. 7, 1983, PCT Pub. No. WO83/01257, PCT Pub. Date Apr. 14, 1983

PCT Filed Oct. 7, 1982, Ser. No. 511,135

Claims priority, application Australia, Oct. 7, 1981, PF1093

Int. Cl.⁴ C07C *29/76*; C12N *1/02*; A01D *44/00*; B01D *15/08*

U.S. Cl. 568—870 **19 Claims**

1. A method for harvesting algae of the genus Dunaliella from a suspension thereof in brine containing sodium chloride at a concentration of about 3M or above, characterized in that the algal suspension is contacted with an adsorbent having a hydrophobic surface so as to adsorb the algae thereon, and the adsorbent with the algae adsorbed thereon is separated from the brine, characterized in that the adsorbent is a finely divided material which has a high surface area and has a hydrophobic surface or has been treated to produce a hydrophobic surface.

4,554,391

PREPARATION OF 2-HALO-1-ALKENES FROM HYDROCARBON STREAMS

Robert T. Klun; Craig B. Murchison, and Dennis A. Hucul, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 411,726, Aug. 26, 1982, Pat. No. 4,480,121. This application Aug. 22, 1984, Ser. No. 642,989

The portion of the term of this patent subsequent to Oct. 30, 2001, has been disclaimed.

Int. Cl.⁴ C07C *17/08*

U.S. Cl. 570—231 **10 Claims**

1. A process for preparing a 2-halo-1-alkene comprising contacting a hydrocarbon stream with a hydrogen halide, in the presence of water and an effective amount of a catalyst, at a temperature between about 100° C. and about 400° C., wherein; the hydrocarbon stream comprises a 1,2-diene, a terminal acetylene or mixtures thereof, represented by the formulas $CH_2{=}C{=}CH{-}R$ or $CH{\equiv}C{-}CH_2{-}R$ wherein R is hydrogen, alkyl, cycloalkyl or aryl and may be substituted or unsubstituted; the water is present in an amount of between about 1,000 and 100,000 parts per million by weight; and the catalyst comprises carbon, silica alumina, aluminosilicates, silica gel, silica, silica magnesia, silicalite, group IIIA, IIIB, IVA, IVB or V metal oxides or rare earth oxides.

4,554,392

METHOD OF PREPARING 1,2-DICHLOROETHANE FROM ETHYLENE AND CHLORINE GAS

Hans Leuck, and Hans-Jörg Westermann, both of Troisdorf, Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Filed Nov. 6, 1984, Ser. No. 668,649

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1983, 3340624

Int. Cl.⁴ C07C *17/02*

U.S. Cl. 570—254 **7 Claims**

1. A process for the preparation of 1,2-dichloroethane from ethylene and chlorine gas in an approximately equimolar ratio, at reaction pressures between 2 and 20 bar and boiling temperatures of the formed ethylene dichloride between 105° and 225° C. in the presence of catalysts acting as Lewis acids, containing the steps of removing catalyst-free vapors consisting essentially of ethylene dichloride and catalyst-containing liquid ethylene dichloride from a reactor and condensing and cooling

the vapors to form a condensed and cooled stream of ethylene dichloride; comprising:

introducing gaseous chlorine, which has a purity of about 90 to 100 vol.-%, into the condensed and cooled stream of ethylene dichloride to absorb chlorine therein;

pressurizing the chlorine-containing ethylene dichloride stream to reaction pressure and then admixing the catalyst-containing ethylene dichloride;

heating the chlorine-containing and catalyst-containing ethylene dichloride stream;

feeding into a downward stream of the reactor an ethylene partial stream; and

contacting the downward stream with a main ethylene input quantity introduced at the bottom of the reactor at a mass rate between 30 and 200 kg/sec·m^2 of this ethylene quantity whereby said downward stream is reversed into an upward stream forming a highly disperse gas-liquid phase.

4,554,393

TWO-STAGE PROCESS FOR CONVERTING PROPANE TO AROMATICS

Sandra Liberts, Springvale South; Jack G. Creer, Upwey, and Thomas Mole, Kew, all of Australia, assignors to The Broken Hill Proprietary Company Limited, Melbourne and Commonwealth Scientific and Industrial Research Organisation, Campbell, both of, Australia

Continuation of Ser. No. 330,659, Dec. 14, 1981, abandoned. This application Apr. 18, 1983, Ser. No. 485,379

Claims priority, application Australia, Dec. 19, 1980, PE7041

Int. Cl.^{4} C07C *2/08, 5/32*

U.S. Cl. 585—322 **16 Claims**

1. A process for the production of aromatic compounds from propane feedstock which comprises contacting the feedstock in a first reactor with a promoted chromia alumina dehydrogenation catalyst at a temperature between 380° and less than 550° C. to produce a first reaction product containing propylene; contacting said first reaction product in a second reactor with a crystalline aluminosilicate catalyst to produce a second reaction product comprising aromatics and C_{3+} hydrocarbons, and separating an aromatic-rich fraction therefrom; and recycling a gaseous fraction of the second reaction product to the first reactor, said recycled gaseous fraction consisting essentially of one or more C_{3+} hydrocarbons.

4,554,394

ORGANOPHOSPHORUS-TREATED ZEOLITE CATALYSTS FOR PARA-SELECTIVE AROMATICS CONVERSION

Nancy P. Forbus, Newtown, Pa., and Warren W. Kaeding, Lawrenceville, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 614,195, May 25, 1984, Pat. No. 4,504,690, which is a division of Ser. No. 489,424, Apr. 28, 1983, Pat. No. 4,469,806, which is a continuation-in-part of Ser. No. 359,560, Mar. 18, 1982, Pat. No. 4,409,132. This application Nov. 7, 1984, Ser. No. 669,156

Int. Cl.^{4} C07C *5/22*

U.S. Cl. 585—474 **7 Claims**

1. A process for disproportionation of aromatic compounds to a dialkyl benzene compound mixture enriched in the para-dialkylbenzene isomer, said process comprising contacting said aromatic compounds under conversion conditions with a catalyst comprising both a crystalline zeolite material having a constraint index within the approximate range of 1 to 12 and a silica/alumina mole ratio of at least 12 and a minor proportion of one or more difficultly reducible oxides, said catalyst being prepared by a method comprising contacting said catalyst with a vapor phase organophosphorus reagent selected from C_{1-4} alkyl phosphite esters, C_{1-4} alkyl phosphate esters and dimethyl-methylphosphonate, at a temperature of 100° C. to 300° C. and for a period of time and under conditions sufficient to either enhance para-selectivity of said catalyst or to reduce the susceptibility of said catalyst to deselectivation by contact with moisture or halogen.

4,554,395

METHANE CONVERSION

C. Andrew Jones, Newtown Square; John J. Leonard, Springfield, and John A. Sofranko, West Chester, all of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 412,649, Aug. 30, 1982, abandoned. This application Aug. 12, 1983, Ser. No. 522,935

Int. Cl.^{4} C07C *2/00*

U.S. Cl. 585—500 **38 Claims**

1. In an improved method for converting methane to higher hydrocarbon products which comprises contacting a gas comprising methane at synthesizing conditions with at least one reducible oxide of at least one metal which oxides when contacted with methane at synthesizing conditions are reduced and produce higher hydrocarbon products and water, the improvement which comprises conducting said contacting at a pressure greater than atmospheric pressure.

4,554,396

OLEFIN UPGRADING WITH FERROSILICATE ZEOLITE CATALYST

Clarence D. Chang, Princeton, and Cynthia T. W. Chu, Pennington, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 18, 1984, Ser. No. 651,748

Int. Cl.^{4} C07C *2/02*

U.S. Cl. 585—531 **8 Claims**

1. A process for upgrading lower olefin to produce heavier hydrocarbons having a substantially linear molecular conformation comprising:

contacting olefinic feedstock under oligomerization conditions at reaction temperature and pressure favorable to formation of higher molecular weight aliphatic hydrocarbons with a shape selective medium pore acidic crystalline ferrosilicate zeolite catalyst having a major portion of zeolitic iron in tetrahedral coordination therein.

4,554,397

PROCESS FOR MANUFACTURING A LINEAR OLEFIN FROM A SATURATED FATTY ACID OR FATTY ACID ESTER

Robert Stern, Paris, and Gérard Hillion, Herblay, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Aug. 24, 1984, Ser. No. 643,936

Claims priority, application France, Aug. 25, 1983, 83 13822

Int. Cl.^{4} C07C *1/00*

U.S. Cl. 585—638 **14 Claims**

1. A process for manufacturing olefins, comprising contacting a carboxylic acid or a carboxylic ester with a catalyst at a temperature from 200° to 400° C., wherein the catalyst simultaneously contains nickel and at least one metal from the group consisting of tin, germanium and lead.

4,554,398

PROCESS FOR THE SEPARATION OF C_9 AROMATIC ISOMERS

Denise M. Barthomeuf, Lyons, France, and Daniel D. Rosenfeld, Houston, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 29, 1984, Ser. No. 665,466

Int. Cl.^{4} C07C *7/13*; C10G *25/03*

U.S. Cl. 585—828 **31 Claims**

1. An adsorptive separation process for separating paraethyltoluene from a hydrocarbon feed stream containing a mixture of C_9 aromatic isomers comprising:

(a) contacting said hydrocarbon feed stream with a bed of an adsorbent of zeolite beta;

(b) withdrawing from said bed of adsorbent a raffinate stream containing less of the selectively adsorbed C_9 aromatic isomer of the feed stream;

(c) desorbing the adsorbed paraethyltoluene to effect displacement thereof; and

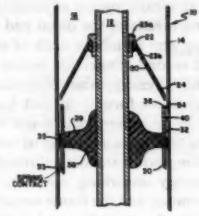
(d) withdrawing from the adsorbent bed an extract stream containing the adsorbed paraethyltoluene.

4,554,399

PARTICLE TRAP FOR COMPRESSED GAS INSULATED TRANSMISSION SYSTEMS

Alan H. Cookson, Pittsburgh, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 26, 1984, Ser. No. 604,352
Int. Cl.[4] H01B 9/06, 9/04; H02G 5/06
U.S. Cl. 174—14 R 19 Claims



1. In a compressed gas insulated transmission system having an inner high voltage conductor supported within an outer conductive sheath by a dielectric support member, an improved means for trapping at least partially conductive particles traveling in a predetermined direction within a cavity formed between said high voltage inner conductor and said sheath, comprising:

a dielectric particle deflector supported from said inner conductor, and opening radially outwardly along said predetermined direction;

conductive shielding means disposed immediately adjacent said sheath for creating a reduced-electric field region between said shielding means and said sheath;

connection means for electrically connecting said conductive shielding means to said sheath;

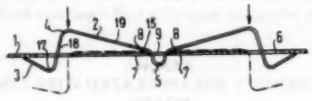
said particle deflector arranged to deflect traveling particles between said shielding means and said sheath so as to be positioned in said reduced-electric field region, such that further travel of said particles within said cavity is prevented and said particles are prevented from impinging upon said dielectric support member.

4,554,400

RADIO-FREQUENCY-TIGHT SHIELDING WITH PLANAR PARTS

Dieter Schmalzl, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 12, 1984, Ser. No. 630,191
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1983, 3328395
Int. Cl.[4] H05K 9/00
U.S. Cl. 174—35 GC 13 Claims



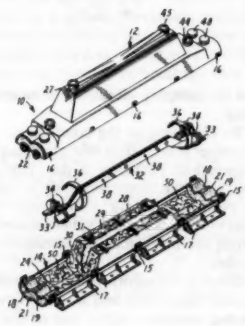
1. In a radio-frequency-tight shield for an electronic device, said shield having a frame and sheet metal structure with planar parts, the improvements comprising each of the planar parts having at least one spring being securable thereto, said spring having two end tabs connected by bent portions to a center portion extending between the bent portions, each of the bent portions having at least two bends extending in opposite directions to form a hump shape, said planar part for each spring having a pair of spaced-apart apertures with an abutment disposed therebetween on one side, said spring being assembled on the planar part with the two tabs extending through the spaced-apart apertures to engage the other side of the planar part as the center portion presses against the abutment and the bent portions extend above the one side.

4,554,401

BURIED CABLE SPLICE CLOSURE

James H. Ball, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 8, 1984, Ser. No. 618,485
Int. Cl.[4] H02G 9/00, 15/113
U.S. Cl. 174—37 13 Claims



1. A buried cable splice closure comprising:

a rigid plastic outer shell having an opening at least at one end through which cables may extend into the closure,

a lower chamber within said outer shell adjacent each said end opening in said outer shell for support of portions of cables extending into the closure,

an upper chamber within said outer shell spaced longitudinally of the closure from each said end opening so as to have a lower chamber between each said end opening and said upper chamber, said upper chamber having a cable splice support area spaced a distance above each said lower chamber when said splice closure is in an upright position,

a cable passageway within said outer shell from each said lower chamber to the cable splice support area in said upper chamber, and

at least one cable end entering a said end opening in said outer shell extending through a said cable passageway and being spliced in said upper chamber to another cable end similarly entering said outer shell, the outer jacket and any shield material on each said cable end terminating in a said lower chamber,

means for permitting introduction of an encapsulant through said outer shell into said upper chamber and each said lower chamber and passageway having a cable end therein, and

encapsulant filling said upper chamber and each said lower chamber and passageway having a cable end therein.

4,554,402

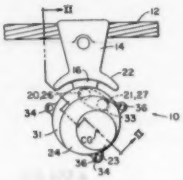
VIBRATION DAMPER FOR OVERHEAD CONDUCTOR

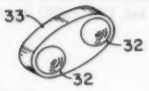
Ronald G. Hawkins, Massena, and Robert M. Hooker, Brushton, both of N.Y., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 565,180, Dec. 23, 1983, Pat. No. 4,527,008. This application Apr. 1, 1985, Ser. No. 718,549

Int. Cl.⁴ H02G *7/14*

U.S. Cl. 174—42 **3 Claims**





1. A device for damping vibrations of an overhead conductor, comprising:

a member for clamping on the conductor,

a weight member attached to said clamping member,

opposed depressions provided in the clamping and weight members, with the depressions in at least said weight member each comprising a relatively small spherical socket that intersects a larger spherical socket at a location intermediate the inner and the outermost portions of the larger socket,

spherical damping elements made of elastomer material located in the depressions and secured between the weight and clamping members, with a pair of said elements being joined together by a rib structure integrally formed with said pair of elements.

4,554,403

ARTICULATED SPACER-DAMPER

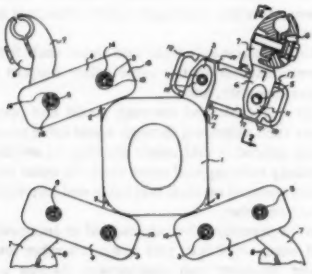
David Hearnshaw, Lutterworth, England, assignor to Dulmison Pty. Limited, Australia

Filed Oct. 5, 1984, Ser. No. 658,234

Claims priority, application Australia, Oct. 7, 1983, PG1738

Int. Cl.⁴ H02G *7/14, 7/12*

U.S. Cl. 174—42 **9 Claims**



1. An articulated spacer damper for electrical transmission lines comprising a frame member; a plurality of intermediate arm members; a plurality of first connection means, each one of said first connection means resiliently pivotally connecting a first end of an associated one of said intermediate arm members to said frame member; a plurality of clamping arm members, each having a proximal end and a distal end; a plurality of second connection means, each one of said second connection means resiliently pivotally connecting the second end of an associated one of said intermediate arm members to the proximal end of an associated one of said clamping arm members; a plurality of clamping means; means adjustably attaching each one of said clamping means to the distal end of an associated one of said clamping arm members; each of said first connection means and said second connection means including a pair of non-circular, resilient energy absorbing elements lockingly positioned within recesses formed in said frame member, in said associated one of said intermediate arm members, and in said proximal end of said associated one of said clamping arm members and a locking bolt extending through the associated pair of resilient energy absorbing elements, the associated intermediate arm member, and the frame member or the associated clamping arm member to define an axis for hinged pivoting while holding said resilient energy absorbing elements in compression.

4,554,404

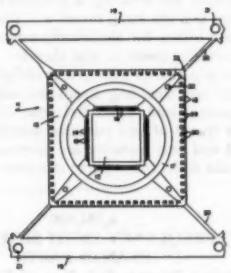
SUPPORT FOR LEAD FRAME FOR IC CHIP CARRIER

Thomas G. Gilder, Jr., York, and Raymond D. O'Dean, Dover, both of Pa., assignors to Gte Products Corporation, Stamford, Conn.

Filed Mar. 26, 1984, Ser. No. 593,458

Int. Cl.⁴ H01L *23/28, 23/50*

U.S. Cl. 174—52 FP **6 Claims**



1. A lead frame support comprising a support made of an electrically insulative, thermoplastic material, a pad area at the center of said support in which an IC chip can be disposed, said pad area being square or rectangular, and first raised spaced-apart projections proximate the periphery of said pad area, on all four sides thereof, the spaces between the projections defining slots in which the leads of a lead frame can be disposed.

4,554,405

HIGH DENSITY ENCAPSULATED WIRE CIRCUIT BOARD

Kenneth J. Varker, Binghamton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 392,996, Jun. 28, 1982, abandoned. This application Oct. 10, 1984, Ser. No. 659,485

Int. Cl.⁴ H05K *1/03*

U.S. Cl. 174—68.5 **6 Claims**

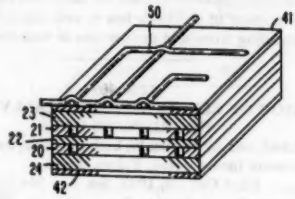
1. A circuit board comprising:

a rigid base plane comprising a metallic layer which returns to a constant shape after being thermally cycled,

a layer of epoxy glass cloth pre-preg covering said base plane, the thickness of said layer being such that its lateral

movement during thermal cycling is controlled by said rigid base plane,

a layer of curable adhesive covering said epoxy, said adhesive being other than polyester and having a viscosity curve which at first decreases due to the application of thermal energy and which later rises rapidly as the material cures,



wires encapsulated in said adhesive which has been cured, whereby said wires are rigidly fixed to said rigid base plane and the movement of said wires during thermal cycling is controlled by said rigid base plane preventing unpredictable variations in the location of said wires due to non rigidity of said epoxy glass cloth pre-preg, and

plated through holes making connections to said wires.

4,554,406

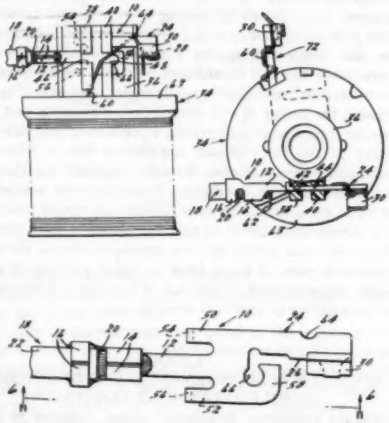
ELECTRIC WIRING TERMINAL AND METHOD OF MAKING SAME

Michael Slavin, Troy, and Ellsworth S. Miller, Mt. Clemens, both of Mich., assignors to Lectron Products, Inc., Rochester, Mich.

Continuation of Ser. No. 375,764, May 6, 1982, abandoned. This application Jul. 26, 1984, Ser. No. 634,184

Int. Cl.⁴ H01R *4/10*

U.S. Cl. 174—94 R **18 Claims**



1. An electrical connection comprising an electrical terminal and a current carrying wire coated with a resin-type of high temperature insulation and suitable for use particularly in situations that subject the wire to vibrations or other conditions likely to result in a high incidence of wire breakage at the terminal,

said terminal being of a metallic material and having a pair of relatively large clamping portions having a relatively low resistance to flow of electrical current therethrough and being interconnected therebetween by a deformable, relatively narrow neck portion having a relatively high resistance to flow of electrical current therethrough and having a first portion of said coated wire wrapped thereabout,

said clamping portions having relatively large, flat wire engaging clamping faces extending between the respective relatively thin side edges thereof and having a second portion of said coated wire disposed therebetween, said clamping faces being disposed in close proximate face-to-face clamping relationship with said second portion of said coated wire as a result of at least one of said clamping portions being engaged by a current carrying element with sufficient force to cause bending of said neck portion, said second wire portion having been subjected to a clamping force applied in a direction generally perpendicular to the respective clamping faces so that said second wire portion is fixedly secured to said terminal by being physically clamped between said relatively large flat clamping faces and not between the relatively thin edges of the clamping portions,

said first portion of said wire wrapped around said neck portion of said terminal having the insulation exploded therefrom as a result of electrical current from said element flowing through said high-resistant neck portion to assure a good electrical connection between said wire and said terminal, the relatively low resistance characteristic of said clamping portions preventing said clamping portions from being heated sufficiently to blow the insulation from the clamped portion of said wire and thus maintaining the resistance thereof to breakage due to vibrations and other adverse conditions occurring in use.

4,554,407

SUPERCONDUCTING CONDUCTORS HAVING A STABILIZING SHEATH BRAZED TO ITS MATRIX AND A PROCESS FOR MAKING THE SAME

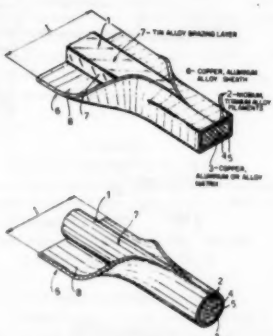
Sergio Ceresara, Lucca, and Mario Brogi, Piano di Coreglia, both of Italy, assignors to La Metalli Industriale S.p.A., Italy

Filed Jun. 28, 1984, Ser. No. 625,556

Claims priority, application Italy, Dec. 23, 1983, 68346 A/83

Int. Cl.⁴ H01B *12/00, 13/00*

U.S. Cl. 174—128 S **8 Claims**



1. A process for the production of superconducting conductors of the type comprising a plurality of filaments of an alloy containing niobium and titanium as base material and a composite matrix of copper, aluminum or alloys of these elements in which the filaments are embedded and which serves to stabilize the superconductor, the ratio between the volume of the material of the said matrix and the volume of the said filaments being greater than one, characterized by the fact that it comprises at least a first phase of preparing a first superconducting conductor including the said filaments and a first matrix of copper, aluminum or alloys of these elements;

(a) a second phase of preparing a strip of copper, aluminum

or alloys or these elements, of width substantially equal to the perimeter of the cross section of the said first superconducting conductor;

(b) a third phase of depositing a layer of brazing material on the outer surface of the said first superconducting conductor and at least on one of the faces of the said strip;

(c) a fourth phase of connecting the said first superconducting conductor to the said strip and of shaping the strip itself by plastic deformation around the conductor in such a way that this latter is completely enclosed by the strip;

(d) a fifth phase of heat treating the assembled said first superconducting conductor and said strip in the preceding phases for producing a brazed connection between the said first superconducting conductor and the said strip enclosing it.

5. A superconducting conductor of the type comprising a plurality of filaments of an alloy containing niobium and titanium and a composite matrix of copper, aluminum or alloys of these elements, in which these filaments are disposed and which serves to stabilize the superconductor, characterized by the fact that the superconductor comprises a first superconducting conductor which is provided with said filaments and a first matrix of copper, aluminum or alloys of these elements, and a sheath having a uniform thickness made of copper, aluminum or alloys of these elements which is disposed about the said first superconducting conductor in such a way as completely to enclose it, the said sheath having a pair of longitudinal continuous edges substantially in contact with one another and disposed between the inner surface of the said sheath and the outer surface of the said first superconducting conductor a layer of brazing material operable to form a composite matrix.

4,554,408

CABLE OUTLET ADAPTORS

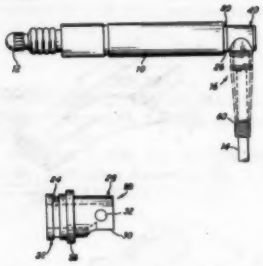
Roger J. Pullen, Bognor Regis, England, assignor to Schlumberger Electronics (U.K.) Limited, Farnborough, England

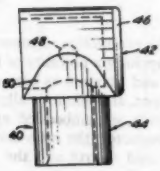
Filed Jan. 23, 1984, Ser. No. 573,183

Claims priority, application United Kingdom, Jan. 28, 1983, 8302404

Int. Cl.⁴ H01R *13/56, 13/58*

U.S. Cl. 174—135 **8 Claims**





1. A cable outlet adaptor comprising: (i) a hollow bush through which a cable can extend longitudinally and having an end portion with a cut-out in one side, and (ii) a separate hollow hood having a cap portion arranged to be positioned around said end portion of said bush, and a sleeve portion extending from the cap portion at an angle thereto, the hood being separable into two sections along a common median plane of the cap and sleeve portions, whereby the hood can be installed with the cable in situ in the bush by displaceing the cable to extend through the cut-out in the bush and placing the two sections of the hood around the cable and the bush, so that said end portion of the bush lies in said cap portion and the cable extending from said cut-out lies in said sleeve portion.

4,554,409

METHOD OF ELECTROMAGNETICALLY READING COORDINATE DATA

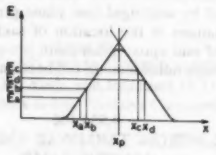
Kenji Mitsui, and Akira Suzuki, both of Osaka, Japan, assignors to Photoron Incorporated, Tokyo, Japan

Filed Oct. 24, 1983, Ser. No. 544,701

Claims priority, application Japan, Oct. 28, 1982, 57-190344

Int. Cl.⁴ G08C *21/00*

U.S. Cl. 178—19 **7 Claims**



1. A method of reading coordinate data using an electromagnetic digitizer system including a tablet in which two mutually perpendicular sets of parallel conductors are arrayed so as to substantially define a rectangular Cartesian coordinate system, and a cursor coil which is movable along the surface of said tablet comprising: for each axial direction of said coordinate system, supplying an alternating current to said cursor coil so that plotting electromotive forces induced in said conductors by said cursor coil against a relative position between said cursor coil and said conductors will give a substantially symmetrical distribution curve with respect to an axis of symmetry passing the center of said cursor coil, measuring said electromotive forces, and determining a position of said axis of symmetry of the basis of said distribution curve; wherein said conductors have one ends thereof connected together so that respective adjacent conductors form loops and wherein a pair of loops are selected on each side of said axis of symmetry of said distribution curve so that two straight lines connecting respective two points thereon corresponding to the selected respective pairs of loops have an equal gradient in absolute value, and a position of said axis of symmetry is determined as an intersection of said two straight lines.

4,554,410

SYSTEM FOR MAINTENANCE AND DIAGNOSIS OF MOBILE TELEPHONE EQUIPMENT

Takayuki Furumoto, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 10, 1983, Ser. No. 550,588

Claims priority, application Japan, Nov. 12, 1982, 57-197733

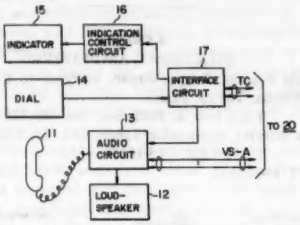
Int. Cl.⁴ H04Q *7/04*

U.S. Cl. 179—2 E **3 Claims**

1. A system for maintenance and diagnosis which is adapted for mobile telephone equipment of the type having a telephone unit, a control unit operable on the basis of stored program control, a radio transmitter/receiver unit and an antenna unit, said system comprising:

means for generating a specified dial number signal from a dial of the telephone unit;

means included in said control unit for reading the specified dial number signal and selecting a desired program previ-



ously stored in said control unit to perform diagnosis of said mobile telephone equipment; and

means for indicating a result of the diagnosis on an indicator.

4,554,411

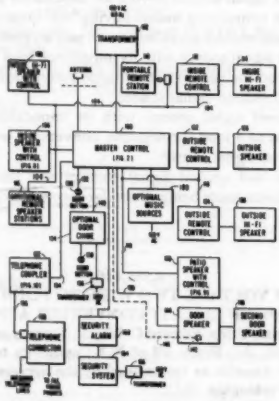
INTERCOM SYSTEM

William E. Armstrong, Cincinnati, Ohio, assignor to Scovill Inc., Waterbury, Conn.

Filed Jan. 24, 1983, Ser. No. 460,615

Int. Cl.⁴ H04M *9/08*

U.S. Cl. 179—37 **14 Claims**



1. A communication system comprising

a plurality of common lines including an audio line, a control line and a talk-listen line;

a plurality of station units connected to the common lines and each including microphone and speaker means, a talk switch for producing a talk signal on the control line, latch means for being set when each respective talk switch is operated, means for operating each respective microphone and speaker means as speaker means responding to audio signals on the audio line except when each respective talk switch is operated or when a listen signal is present on the talk-listen line while each respective latch means is reset, means for operating the microphone and speaker means as microphone means generating audio signals on the audio line when each respective talk switch is operated or when a listen signal is present on the talk-listen line while each respective latch means is reset, and means for selectively resetting each respective latch means; and

a master control unit connected to the common lines and including means responsive to termination of operation of the talk signal on the control line for producing a listen signal on the talk-listen line.

4,554,412

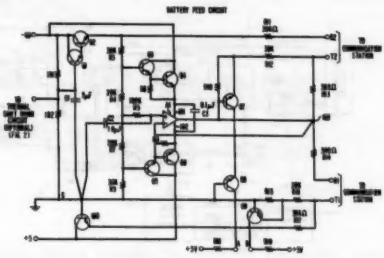
RESISTIVE LINE CIRCUIT

Douglas C. Smith, Rumson, N.J., assignor to AT&T Information Systems Inc., Holmdel, N.J.

Filed Jul. 23, 1984, Ser. No. 633,478

Int. Cl.⁴ H04M *19/00*

U.S. Cl. 179—78 R **12 Claims**



1. A battery feed system for supplying power to a pair of communication circuits, each circuit having a pair of output conductors, said system comprising

means for placing two 24-volt inductorless battery feed circuits in series between a −48 v power supply input and ground so that current is supplied to said communication circuits over said output conductors through resistive elements in each said battery feed circuit,

means, common for both battery feed circuits, for eliminating differential interference signals on said output conductor pairs due to interference signals on said ground,

means, common to both battery feed circuits, for eliminating both differential and common mode interference signals on said output conductor pairs due to interference signals on said −48 v power supply input, and

means including both said ground interference signal eliminating means and said −48 v power supply input interference signal eliminating means and including a low impedance node between certain of said resistive elements of each said battery feed circuit for eliminating crosstalk between said conductor pairs.

4,554,413

KEY TELEPHONE SYSTEM

Edouard Pinede, Norwalk; Serge Faubias, Monroe, and Peter F. Stevens, Trumbull, all of Conn., assignors to PKS/Communications, Inc., Milford, Conn.

Filed May 31, 1984, Ser. No. 616,566

Int. Cl.⁴ H04M *9/06, 9/08*

U.S. Cl. 179—99 M **17 Claims**

1. A key telephone system comprising:

A plurality of telephone stations each having a two wire audio input port, a separate two wire audio output port, and a data port;

centralized station interface means coupled to each of said telephone stations for providing a station receive signal path for each two wire audio input port and a station transmit signal path for each two wire audio output port;

local loop interface means for dividing each of a plurality of telephone trunk lines into separate trunk transmit and trunk receive signal paths; and

crosspoint matrix means coupled between said centralized station interface means and said local loop interface means for interconnecting station transmit signal paths to station receive signal paths, station transmit signal paths to trunk

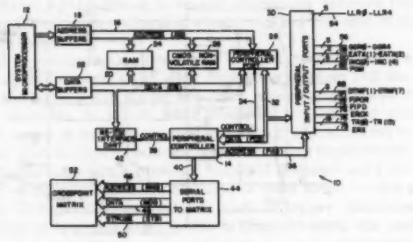
receive signal paths, and trunk transmit signal paths to station receive signal paths;

said crosspoint matrix means including:

a first group of addressable crosspoint switches for coupling selected transmit signal paths to selected first link points;

a second group of addressable crosspoint switches for coupling selected receive signal paths to selected second link points;

a third group of addressable crosspoint switches for coupling selected first link points to selected second link points; and



control means for completing a duplex communication channel by addressing and actuating a first set of crosspoint switches from said first, second, and third groups to effect a connection from a transmit signal path to a receive signal path across first and second link points, and a second set of crosspoint switches from said first, second and third groups to effect a connection from the reciprocal transmit signal path to the reciprocal receive signal path across first and second link points.

4,554,414

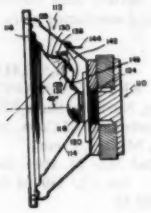
MULTI-DRIVER LOUDSPEAKER

William N. House, Bloomington, Ind., assignor to Harman International Industries Incorporated, Northridge, Calif.

Continuation-in-part of Ser. No. 489,322, Apr. 28, 1983, , which is a continuation-in-part of Ser. No. 383,603, Jun. 1, 1982,. This application Dec. 27, 1983, Ser. No. 565,464

Int. Cl.[4] H04R *1/24, 9/06, 17/00*

U.S. Cl. 179—115.5 PS **10 Claims**



1. A multi-driver loudspeaker combination comprising

a first transducer of the dynamic radiator type designed to reproduce sound in the lower portion of the audio frequency range, the radiator of the first transducer including a diaphragm,

a second transducer designed to reproduce sound in the upper portion of the audio frequency range, said second transducer being positioned within the periphery of the said diaphragm,

and means for mounting the second transducer, the mounting means consisting essentially of a base support, means for mounting the base support from the first transducer radiator to extend away from the first transducer, the base support terminating at an edge, the second transducer including a diaphragm having an edge joined to the first-mentioned edge to support the second transducer from the base support.

4,554,415

BILATERAL AMPLIFIER

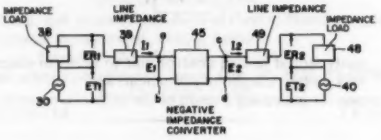
Nakamichi Sasano, Tokyo, Japan, assignor to Comnix Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 4, 1983, Ser. No. 463,725

Claims priority, application Japan, Oct. 22, 1982, 57-185818

Int. Cl.[4] H04B *3/36*

U.S. Cl. 179—170 G **2 Claims**



1. A system for bilateral amplification comprising

a single negative impedance converter having first and second terminal sides;

a first signal source having an impedance load;

a first connecting means having line impedance, to connect said first signal source to said first terminal side;

a second signal source having an impedance load;

a second connecting means having line impedance, to connect said second signal source to said second terminal side;

said first signal source with its impedance load being utilized as a load for negative impedance conversion with respect to said second signal source;

said second signal source with its impedance load being utilized as a load for negative conversion with respect to said first signal source;

said first and second signal sources and their respective impedance loads being of similar forms of impedances and loads.

4,554,416

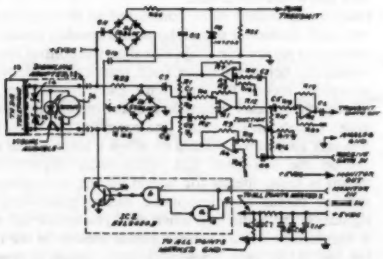
LOW VOLTAGE TWO WIRE TO FOUR WIRE TELEPHONE CIRCUIT CONVERTER APPARATUS

Dino J. Pacini, Utica; Edward C. Miceli, Verona, and Norman J. Sturdevant, Jr., Rome, all of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 8, 1983, Ser. No. 473,384

Int. Cl.[4] H04B *1/58*

U.S. Cl. 179—170 NC **4 Claims**



1. A low voltage two wire to four wire telephone circuit converter apparatus comprising in combination

a telephone means utilizing two wires to receive input sig-

nals and to transmit output signals; said telephone means having a transmit button to send voice frequency singals;

a first and second means for amplifying connected in series, said first amplifying means receiving said voice frequency signals from said telephone means by means of said two wires therefrom, said first amplifying means amplifying said voice frequency signals and applying them to said second amplifying means said second amplifying means further amplifying said voice frequency signal to provide a transmit data out signal, said transmit data out signal being referenced to analog ground;

a third and fourth means for amplifying arranged in parallel, said third and fourth amplifying means both receiving a receive data in signal, said third and fourth amplifying means each amplifying said receive data in signal and applying it to said telephone means by means of said two wire of said telephone means, and;

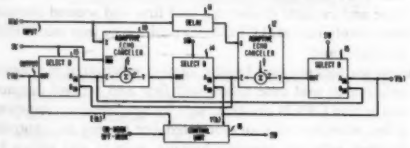
a low voltage source to supply a low voltage DC signal to said second, third and fourth amplifying means respectively; and further including a signal adapted means connected to said telephone means to receive an alternating ring signal therefrom, and a signal converting means converting said ring signal to a ring transmit signal which is a constant logic one level, said signal adapter means receiving a ring in signal which activates said signal adapter means to indicate a telehphone call is incoming.

4,554,417

TANDEM ADAPTIVE ECHO CANCELER ARRANGEMENT

Kim L. Boyer, Walkersville, Md., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 4, 1983, Ser. No. 464,054
Int. Cl.[4] H04B *3/20*
U.S. Cl. 179—170.2 **11 Claims**



1. Apparatus including,

a first adaptive echo canceler having a receive input, a transmit input and a transmit output, and

at least a second adaptive echo canceler having a receive input, a transmit input and a transmit output,

said apparatus characterized by,

means for switchably connecting said transmit inputs and transmit outputs of said adaptive echo cancelers in a tandem connection, and

means for controlling switching of the relative positions of said transmit inputs and transmit outputs of said adaptive echo cancelers in said tandem connection, wherein an extended impulse response is obtained.

4,554,418

INFORMATION MONITORING AND NOTIFICATION METHOD AND APPARATUS

Frank C. Toy, 211 Chelsea Cir., Lake Villa, Ill. 60046

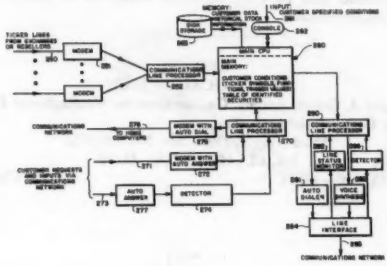
Filed May 16, 1983, Ser. No. 495,070
Int. Cl.[4] H04M *11/00, 1/274*
U.S. Cl. 179—2 DP **45 Claims**

7. A system for monitoring financial market information in near real time and for notifying selected users upon occurrences of specific selected events of interest, said system comprising:

a data processing system including a central processing unit and a memory system;

first information input systems for receiving first input information comprising data pertaining to the various financial markets of interest;

second information input systems for receiving second input information comprising data described said specific events of interest, and describing a desired notification sequence;



information output systems for remotely contacting said users via telecommunications networks and thereafter transmitting desired information pertaining to said events of interest;

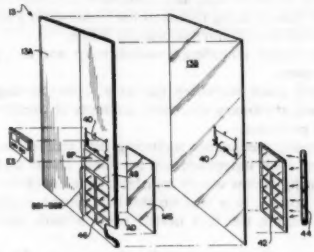
wherein said data processing system monitors said first input information and detects the occurrence of said events of interest described by said second input data, and activates said information output system in accordance with said described desired contact sequence to initiate said remote user contact when said occurrence has been detected.

4,554,419

TOUCH SELECTION PANEL FOR A VENDING MACHINE

Eddie W. King, Marietta; Herman K. Duke, Atlanta, and Don S. Summerville, Decatur, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Dec. 2, 1983, Ser. No. 557,320
Int. Cl.[4] H01H *13/70*
U.S. Cl. 200—5 A **14 Claims**



1. A touch-sensitive selection panel structure for a vending machine for initiating the vend of related products comprising:

(a) a first sheet member having transparent areas thereon defining touch-sensitive product selection windows, said first sheet member defining the obverse face of said selection panel;

(b) pressure-sensitive switch means disposed directly behind and contiguous to said first sheet member, said switch means being responsive to pressure applied to said product selection windows to generate electrical signals for initiat-

ing the vend of related products, said switch means being transparent to visible light;

(c) a second sheet member secured to said first sheet member by an adhesive coating and having transparent areas thereon disposed behind and contiguous to said switch means; and

(d) pocket means between said first and second sheet members for removably containing said pressure-sensitive switch means, said adhesive coating being relieved in area behind said product selection windows to define said pocket means.

4,554,420

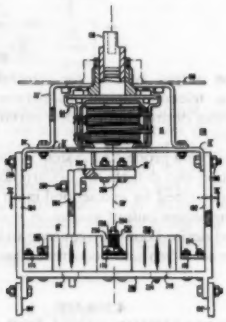
ELECTRICAL SWITCH

Gregory J. Golub, Athens, Ga., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 1, 1984, Ser. No. 606,072

Int. Cl.[4] H01H *9/30, 21/50*

U.S. Cl. 200—11 TC **21 Claims**



1. A rotary, snap-action electrical switch suitable for immersion in the liquid dielectric of an electrical transformer and operatable externally thereto, comprising:

a switch frame,

and rotor means,

said switch frame including stop members, one for each position of the switch, and stationary electrical contacts,

said rotor means being mounted for rotation on a longitudinal center line within said switch frame,

said rotor means including a switch rotor and an operating mechanism,

said switch rotor including electrical contacts engageable with said stationary electrical contacts at predetermined switch positions,

said operating mechanism including first and second nested portions each independently rotatable about said center line, spring means which translates rotation of the second nested portion to a bias on the first nested portion, and means linking the first nested portion with said switch rotor,

said first nested portion including latch means for latching the first nested portion at a stop member, said latch means comprising first and second latch members, with one latch member stopping the first nested portion at a stop member, and the other preventing rebound,

said second nested portion including an actuation shaft for loading the spring means against the resistance of the latched first nested portion,

said second nested portion further including latch release means which releases the latch means from a stop member during the loading of the spring means, with the loaded spring means causing the unlatched first nested portion to advance to an adjacent stop member with a snap action, while simultaneously advancing the switch rotor to an adjacent switch position.

4,554,421

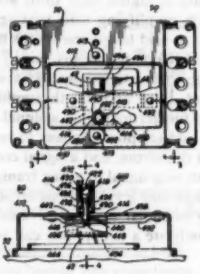
MOLDED CASE CIRCUIT BREAKER WITH HANDLE LOCK

Kurt A. Grunert, Beaver, and Joseph F. Changle, Scott, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 569,056, Jan. 9, 1984, abandoned. This application Apr. 3, 1985, Ser. No. 719,036

Int. Cl.[4] H01H *9/28*

U.S. Cl. 200—43.15 **14 Claims**



1. An electrical circuit breaker comprising:

a first electrical contact,

a second electrical contact,

said first and second contacts being movable into a CLOSED position and into an OPEN position,

a case for housing the internal components of said circuit breaker including said first and second contacts,

a manually engagable handle extending exteriorly of said case and capable of moving said first and second contacts alternately into said CLOSED position or into said OPEN position, and

means for locking said handle against substantial movement relative to said case when said first and second contacts are in said OPEN position, said locking means comprising a first member with an elongated slot having an integrally formed enlarged opening locking portion and spring biased means of a size larger than said slot mechanically interconnected with said handle and movable along said slot, said spring biased means being so configured as to be capable of being depressedly disposed in said locking portion when said first and second contacts are in said OPEN position, said spring biased means, when depressed into said locking portion, preventing substantial movement of said handle relative to said case.

4,554,422

GEARBOX INDICATOR SWITCH

Derek M. Embrey, Lisvane, Wales; Stuart F. Webb, Wokingham, England; Ian J. Bickford, Burpham, England, and Argus F. Caxton Doss-Desouza, Camberley, England, assignors to AB Electronic Components Limited, Glamorgan, Wales

Filed Sep. 27, 1983, Ser. No. 536,406

Claims priority, application United Kingdom, Sep. 29, 1982, 8227822

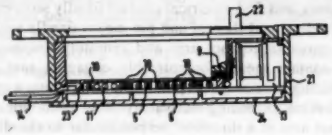
Int. Cl.[4] H01H *3/16;* **B60Q** *9/00;* **G05G** *25/00*

U.S. Cl. 200—61.91 **6 Claims**

1. In a vehicle having a gear selecting mechanism operated to select a gear position, an improved gear box indicator switch for signaling the identity of a selected gear comprising:

a magnet coupled to move to one of a plurality of positions in response to a change in position of a gear selector mechanism;

a plurality of reed switches adjacent said plurality of positions, each of said reed switches being operated when said magnet assumes a respective position, the change in state of a respective reed switch identifying a selected gear; and



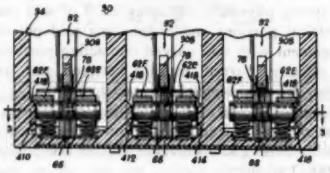
a plurality of flux concentrators which separate said reed switches to provide substantial magnetic shielding between adjacent switches.

4,554,423

MOLDED CASE CIRCUIT BREAKER WITH ADJACENT POLE MECHANISMS SPACED CLOSER THAN ADJACENT TERMINALS

Robert H. Flick, Brighton Township, Beaver County, and Lawrence D. Dennis, Henry Clay Township, Fayette County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 9, 1984, Ser. No. 569,057
Int. Cl.[4] H01H *9/00*
U.S. Cl. 200—293 **29 Claims**



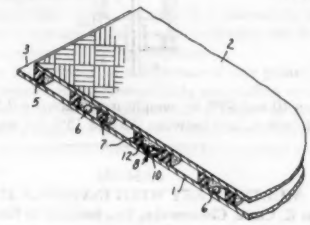
1. A polyphase electrical circuit breaker comprising:
a first electrical contact,
a second electrical contact,
a third electrical contact,
a fourth electrical contact,
said first and second electrical contacts being disposed in a first pole of said circuit breaker and being movable into a CLOSED position and into an OPEN position,
said third and fourth electrical contacts being disposed in a second pole of said circuit breaker and being movable into a CLOSED position and into an OPEN POSITION,
a first externally extending terminal of said circuit breaker electrically connected in said first pole of said circuit breaker,
a second externally extending electrical terminal of said circuit breaker electrically connected in said second pole of said circuit breaker,
a molded case for housing said circuit breaker, and
positioning means for locating said first and third contacts spaced apart by a distance less than the spacing between said first and second terminals, said positioning means comprising molded means for physically engaging said first contact, said molded means comprising an integrally formed portion of said case,
said first contact including first and second components movable relative to each other in the direction of said third and fourth contacts, said first component being configured for movement relative to said second component in the direction of said third and fourth contacts as the result of the physical engagement of said first component by said integrally formed portion of said case.

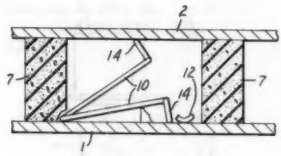
4,554,424

ELECTRICAL SWITCH

Ronald G. Tye, Bishops Stortford, England, assignor to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed May 25, 1984, Ser. No. 614,284
Claims priority, application United Kingdom, May 27, 1983, 8314801
Int. Cl.[4] H01H *3/02, 9/02*
U.S. Cl. 200—86 R **14 Claims**





1. An improved pressure actuatable switchmat comprising first and second electrically conductive members separated by non-conductive material, said conductive members being positioned with respect to each other to make electrical contact therebetween when said switchmat is subjected to an actuation load, the improvement comprising including in the switchmat an overload switch comprising an electrically conductive bridging member having a first end and a second end connected by a spring member held under compression by a frangible restraining means capable of releasing said spring member to its relaxed state upon being subjected to a predetermined overload which breaks said frangible means and causes at least one of said ends to move to provide a completed electrically conductive path between said conductive members.

4,554,425

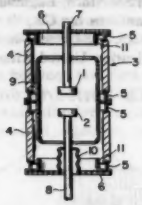
CONTACT OF VACUUM INTERRUPTER AND MANUFACTURING PROCESS THEREFOR

Yoshiyuki Kashiwagi; Yasushi Noda, both of Tokyo, and Kaoru Kitakizaki, Higashimine, all of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Sep. 7, 1984, Ser. No. 648,362
Claims priority, application Japan, Sep. 24, 1983, 58-176764
Int. Cl.[4] H01H *33/66*
U.S. Cl. 200—144 B **6 Claims**

1. A contact of a vacuum interrupter, wherein a material of

the contact consists essentially of between 29 and 74% by weight copper, between 15 and 60% by weight chromium,



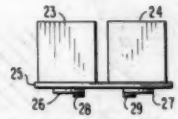
between 10 and 35% by weight iron, between 0.5 and 15% by weight carbon, and between 0.5 and 15% by weight silicon.

4,554,426

MULTIPLE KEY WITH INVISIBLE HINGE

Thomas K. Caste, Chesapeake, Va., assignor to General Electric Company, Portsmouth, Va.

Filed Mar. 5, 1984, Ser. No. 586,383
Int. Cl.⁴ H01H *3/12*
U.S. Cl. 200—159 B **7 Claims**



1. A printed circuit keyboard comprising:

a face plate having a plurality of apertures;

a plurality of keys projecting through said apertures of said face plate;

a resilient pad having convex dimples which engage the bases of said plurality of keys, each of said convex dimples having an electrically conductive concave inner surface;

a printed circuit board having a plurality of key pads in registry with said plurality of keys, each of said key pads being arranged to be bridged by said electrically conductive concave inner surface of an adjacent dimple of said resilient pad when a corresponding key is depressed; and

at least two of said keys being joined to a common base and formed as a unitary structure therewith so that depression of one key of said unitary structure will cause it to move in an arucate path about a hinge area located along said common base outside of the area of juncture of the depressed key with said common base, said unitary structure providing lateral support to said at least two keys independent of the thickness of said face plate thereby allowing said printed circuit keyboard to be manufactured with a thin face plate.

4,554,427

MOLDED CASE CIRCUIT BREAKER WITH MOVABLE LOWER ELECTRICAL CONTACT

Robert H. Flick, Brighton Township, Beaver County, and Walter K. Huffman, Towamencin Township, Montgomery County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 19, 1983, Ser. No. 562,602
Int. Cl.⁴ H01H *1/24*
U.S. Cl. 200—250 **14 Claims**

1. An electrical circuit breaker comprising

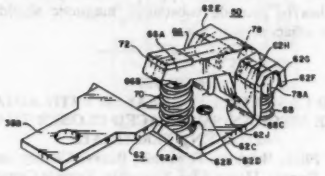
a first electrical contact and

a second movable electrical contact,

said first and second electrical contacts being movable into a CLOSED position and into an OPEN position,

said second electrical contact comprising a stationary member having a first longitudinal end forming an external electrical terminal of said circuit breaker and a second longitudinal end configured as a pair of upstanding spaced-apart curved contacting portions having an opening therebetween,

said second electrical contact further comprising an elongated movable contact arm having contact means for engaging said first electrical contact fixedly secured at one longitudinal end thereof and pin means fixedly secured to said movable contact arm and remotely disposed from said contact means for rotatably engaging said curved contacting portions, said pin means comprising a cylindrical portion extending outwardly from each side of said contact arm in a direction perpendicular to the direction of elongation of said contact arm and being disposed



within said stationary member curved contacting portions, said contact arm being disposed within, and rotatable within, the opening between said spaced-apart curved contacting portions,

said second electrical contact further comprising a compression spring physically engaging each of said pin means cylindrical portions and maintaining said pin means in engagement with said curved contacting portions to enable effective current transfer between said stationary member and said movable contact arm,

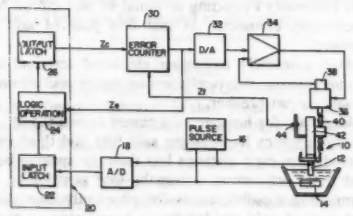
said second electrical contact further comprising biasing means physically engaging said movable contact arm for yieldably biasing said movable contact arm towards said CLOSED position.

4,554,428

ELECTROSPARK MACHINING CONTROL DEVICE

Tamio Takawashi; Toshimitsu Sakakibara, and Shigeo Yamada, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 352,433, Feb. 25, 1982, abandoned.
This application Aug. 2, 1984, Ser. No. 636,087
Claims priority, application Japan, Feb. 28, 1981, 56-28958
Int. Cl.⁴ B23P *1/14*
U.S. Cl. 219—69 G **7 Claims**



1. A control device for an electrospark machining device in which a pulse voltage, which is subjected to current control, is applied to an inter-electrode gap between an electrode and a workpiece to be machined so that electric discharge takes place in said inter-electrode gap, and a position control servo system having sample, logic operation and hold functions controls the inter-electrode gap according to the voltage ap-

plied to the inter-electrode gap, said position control servo system comprising:

a zero-order hold circuit for issuing a position control instruction;

an error counter for presetting an output of said hold circuit, as parallel data therein and for outputting a difference between said output thus preset and an electrode position signal; and

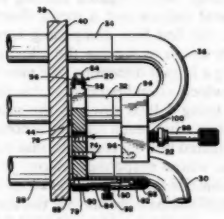
means for applying an output of said error counter, as a speed signal, to a servo system provided for driving said electrode; and to logic means provided in said position control servo system to provide a zero-order hold output for said zero-order hold circuit.

4,554,429

CYLINDRICAL TUBE WELDING ASSEMBLY

Gasparas Kazlauskas, 10219 Briarwood Dr., Los Angeles, Calif. 90024

Filed Sep. 2, 1983, Ser. No. 529,091
Int. Cl.⁴ B23K *9/225*
U.S. Cl. 219—60.2 **19 Claims**



11. A welding head assembly for welding a first section of cylindrical tubing to a second section of cylindrical tubing, the first section protrudes from a tube sheet, said welding head assembly comprising:

a locator plate assembly to be fixedly mounted by fixing means on the exterior surface of the first section, said locator plate assembly being removable; and

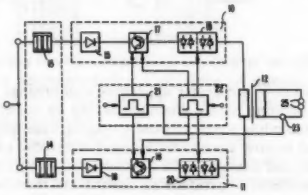
a welding head removably connected by connection means to said locator plate assembly, said welding head to be operable to weld the first section to the second section.

4,554,430

ELECTRICAL POWER SOURCE FOR RESISTANCE WELDING APPARATUS

Zelimir Belamaric, Pully, Switzerland, assignor to L. Schuler GmbH, Fed. Rep. of Germany

Filed Jan. 13, 1983, Ser. No. 457,628
Claims priority, application Fed. Rep. of Germany, May 13, 1981, PCT/DE82/00097
Int. Cl.⁴ B23K *11/24*
U.S. Cl. 219—108 **9 Claims**



1. For a resistance welding machine, an electric energy source having

a static inverter comprising

a first static frequency converter means producing a first sequence of voltage impulses,

at least a second static frequency converter means producing a second sequence of voltage impulses, the second sequence alternating in time with and opposite in polarity to the first sequence,

each of the first and the at least second frequency converter means comprising a direct-current bridge stage, and a thyristor output stage means, each thyristor output stage means, on the input side, connected to an output of a frequency regulator and an output of a welding current regulator,

plural welding electrodes,

welding transformer means comprising a secondary circuit means and a primary circuit means receiving said fist and second sequences of voltage impulses

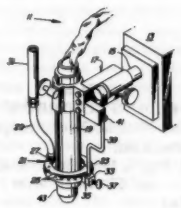
whereby the last impulse of a sequence of one polarity and the first impulse of the immediately succeeding sequence of another polarity are combined in order to produce steep leading edges of half-wave current impulses passing through the secondary circuit means to the plural welding electrodes.

4,554,431

WATER SHIELD RING FOR PLASMA ARC CUTTING TORCH

David L. Koeller, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jun. 4, 1984, Ser. No. 617,211
Int. Cl.⁴ B23K *9/00*
U.S. Cl. 219—121 PP **2 Claims**



1. In combination with a plasma arc cutting machine having a mounting cylinder, a torch support member mounted to said mounting cylinder, a cutting torch having a lower tip portion, said torch being mounted to said torch support member, and a water shield ring; wherein the improvement comprises:

a rod fixably mounted at one end to said torch support member;

said water shield ring being fixably mounted to said rod at said rod's other end to maintain said water shield ring in close spaced apart radial relationship to said torch and in close vertical relationship with said lower tip portions of said torch.

4,554,432

COMPONENTS FOR GAS METAL ARC WELDING GUN

Valgene E. Raloff, Grant Park, Ill., assignor to Dover Corporation, New York, N.Y.

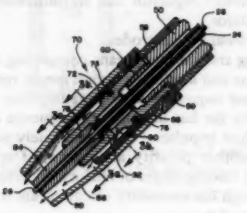
Filed Oct. 5, 1984, Ser. No. 658,121
Int. Cl.⁴ B23K *9/16*
U.S. Cl. 219—137.43 **6 Claims**

1. In a gas metal arc welding gun of the type comprising a contact tip, a gas nozzle around the contact tip, and an electrode liner positioned to direct an electrode to the contact tip, the improvement comprising:

a head member which defines a first recess sized to receive the contact tip, a second recess sized to receive the electrode liner, an internal, annular ridge which defines a restricted diameter passageway between the first and second recesses, and at least one gas port through the head member intersecting the second recess to direct a gas from

the second recess to a region between the gas nozzle and the contact tip;

said passageway sized to pass the electrode liner therethrough to allow the electrode liner to contact the contact tip directly;



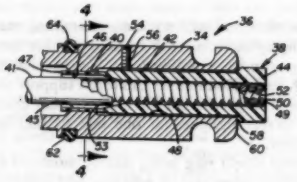
said annular ridge operating simultaneously to provide a stop for the contact tip, to center the electrode liner, and to protect the electrode from welding spatter.

4,554,433

WELDING CONDUIT STOP

David L. Toothaker, Wichita, Kans., assignor to Tweco Products, Inc., Wichita, Kans.

Filed Aug. 3, 1984, Ser. No. 637,427
Int. Cl.[4] B23K 9/00
U.S. Cl. 219—137.63 5 Claims



1. In a welding gun apparatus for supplying welding wire, electrical power, and shielding gas to a working area, including:

a. a connector block assembly adapted to be releasably connected to a supply adapter assembly to receive a shielding gas, welding wire, and electrical power therefrom,

b. a cable assembly having one end connected to said connector block assembly for conveying shielding gas, welding wire, and electrical power,

c. a welding gun assembly connected to an end of said cable assembly,

d. said connector block assembly having a generally elongated connector plug extending from an end thereof,

e. said connector plug having an axial bore therethrough,

f. a generally elongated conduit stop fitted within said axial bore and extending from one end thereof,

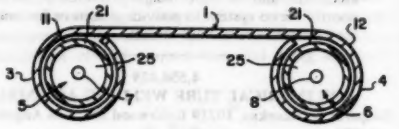
g. wherein the improvement comprises said conduit stop being of resilient plastic material and unitary one-piece construction.

4,554,434

HEATING PLATE FOR PRINTING APPARATUS

Gilles Bailleul, Montesson, and Patrick Coville, Le Chesnay, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 9, 1984, Ser. No. 597,909
Claims priority, application France, Apr. 15, 1983, 83 06226
Int. Cl.[4] F27B 9/28; H05B 1/00
U.S. Cl. 219—216 5 Claims



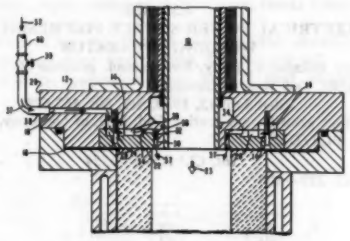
1. A heating plate for drying inked paper in a printing apparatus, comprising two elongated heating elements, having a powdered metal therein and a metal sheet having first and second faces, the first face comprising a rectangular central portion which serves to receive the inked paper, said central portion having a largest dimension, the metal sheet having two end portions which extend parallel to this dimension, said two end portions being folded towards the second face so as to form two holders which each serve to accommodate and retain one of said longated heating elements, said holders each having a cross-section whose shape and internal dimensions are substantially the same as the shape and external dimensions of said heating elements and having intimate thermal contact therebetween.

4,554,435

ELECTRIC ARC HEATER HAVING OUTLET GAS ADMISSION

Charles B. Wolf, Irwin, and Joseph W. George, Blairsville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 18, 1983, Ser. No. 553,340
Int. Cl.[4] H05B 7/18
U.S. Cl. 219—383 13 Claims



1. An electric arc heater apparatus, comprising:

means defining an arc chamber having an outlet therefrom and including a pair of axially spaced, substantially cylindrical hollow electrodes forming a narrow gap therebetween and adapted to be connected to a source of electrical potential to produce an electric arc therebetween;

insulating means for spacing and electrically insulating the electrodes from each other and including a ring having means for channeling a gas to be heated at a high velocity into the gap between the electrodes with the gas being heated by the electric arc formed in the arc chamber when the electrical potential is applied to the cylindrical electrodes;

mounting means disposed about the outlet of the arc cham-

ber for attaching the electric arc heater to a reaction vessel having an opening such that substantially all the arc-heated gas is transferred into the reaction vessel therethrough, the mounting means including a flange having a mating face adjacent the reaction vessel and circumscribing the outlet with the mating face of the flange having a channel circumferentially extending about a substantial portion thereof, the flange having means therein for conducting into the channel a material to be added to the arc heated gas; and

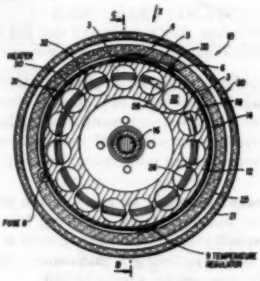
plate means detachably fastened to the flange such that the channel and plate means form a manifold for distributing the material about the outlet of the electric arc heater, the plate means including means for conducting the material from the manifold into the arc-heated gas exiting the outlet of the electric arc heater thereby minimizing thermal and erosive damage to the opening of the reaction vessel caused by passage of the arc-heated gas therethrough and providing for addition of the material to the arc-heated gas.

4,554,436

ELECTRIC HEATER FOR A ROTATING SAMPLE VESSEL CONTAINER IN A SAMPLING DEVICE FOR GAS CHROMATOGRAPHY

Wolfgang Chlosta, Uberlingen, and Wolfgang Riegger, Salem, both of Fed. Rep. of Germany, assignors to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Filed Mar. 15, 1984, Ser. No. 589,821
Int. Cl.⁴ H05B *3/58*
U.S. Cl. 219—385 **4 Claims**



1. A sampling device comprising: a rotatable sample vessel container for accommodating a plurality of sample vessels, means for selectively moving each of said sample vessels to a sample feeding position;

an electric heater for heating said container;

a housing, said container being positioned in said housing;

a heating jacket positioned between said container and said housing, said jacket surrounding said container; said jacket including an electric heating coil enclosed between two silicone mats;

means for maintaining said jacket in material contact with said container whereby a thermal transfer relation is maintained therebetween and;

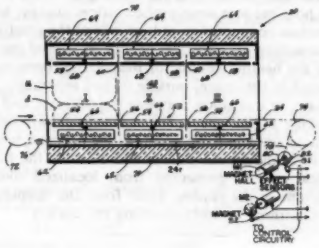
means between said jacket and said housing for preventing rotation of said jacket.

4,554,437

TUNNEL OVEN

Dennis L. Wagner, and Harold D. Wells, both of St. Louis County, Mo., assignors to Pet Incorporated, St. Louis, Mo.

Filed May 17, 1984, Ser. No. 611,108
Int. Cl.⁴ F27B *9/06*; F27D *11/00*; H05B *1/02*
U.S. Cl. 219—388 **15 Claims**



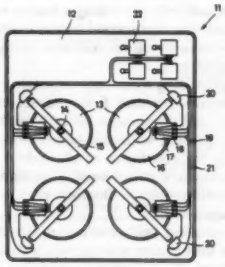
1. In an infrared tunnel oven for cooking of food products by infrared radiant energy, including at least one tunnel over tier having a tunnel-form cooking chamber having an entrance and exit at opposite ends, the chamber having a roof and a hearth, a plurality of infrared heating means extending above the roof and beneath the hearth for respective heating of roof and hearth to predetermined temperatures for direct emission from the roof and hearth of infrared radiant energy for absorption by food products conveyed through the chamber, a speed-controllable conveyor for carrying food products through the chamber, the chamber being longitudinally divided into a plurality of different heating zones, the improvement comprising electronic control circuit means including temperature sensing means and conveyor speed sensing means and a single microprocessor, responsive both to the temperature sensing means and the speed sensing means, for simultaneously controlling the heating means and the conveyor for causing the food products to be heated according to a preselected cooking profile while carried by the conveyor through the chamber.

4,554,438

ELECTRIC COOKER WITH THERMOSTATS FOR PROTECTING AGAINST LOCALIZED OVERHEATING

Felix Schreder, Oberderdingen, Fed. Rep. of Germany, assignor to E.G.O. Elektro-Gerate Blanc u. Fischer, Fed. Rep. of Germany

Filed Apr. 24, 1984, Ser. No. 603,329
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1983, 3315333
Int. Cl.⁴ H05B *3/68*
U.S. Cl. 219—449 **19 Claims**



1. A cooker, comprising:

a mounting plate having openings therein for receiving a plurality of electric hotplates;

a plurality of electric hotplates mounted one each in the openings, each of the hotplates having a hotplate body and electrical heating conductor means in the hotplate body, the hotplates being so disposed in the mounting plate that at least part of the hotplate body projects into a bounded space below the mounting plate;

electrical leads connecting the heating conductor means of each hotplate to a source of electrical energy; and,

a thermostat connected to at least one of the electrical leads for switching off electrical energy to at least one, but not all of the heating conductor means, the thermostat being disposed in the space, outside of and separately from the hotplate, in a position between the hotplate and an outer boundary of the space, the thermostat switching in response to ambient temperature at the position, whereby an area surrounding the cooker and close to the thermostat position can be protected from localized overheating conditions in the cooker, apart from the hotplates themselves, without entirely disabling the cooker.

4,554,439

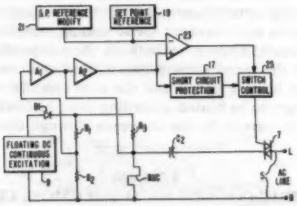
TWO WIRE HEATER REGULATOR CONTROL CIRCUIT HAVING CONTINUOUS TEMPERATURE SENSING EXCITATION INDEPENDENT OF THE APPLICATION OF HEATER VOLTAGE

Michael Cross, Turtle Creek, and John T. Gordon, Ambridge, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 432,604, Oct. 4, 1982, abandoned. This application Nov. 23, 1984, Ser. No. 674,706

Int. Cl.[4] H05B *1/02*

U.S. Cl. 219—497 **6 Claims**



1. A two wire heater regulator control system having continuous temperature sensing excitation independent of the application of heater voltage for controlling the temperature of a heater element; for use in combination with a heater element having only a first and second terminal thereon for the interconnection of said two wire heater regulator control system thereto, the electrical resistance of said element being a function of the temperature of said heater element, said two wire heater regulator control system comprising:

means for selectively providing a heater voltage for connection to said first and second heater element terminals, said heater voltage being an AC line voltage which supplies heating power;

means for providing a continuous sensing excitation voltage for connection to said first and second heater element terminals, said continuous sensing excitation being simultaneously present with said heater voltage and the means by which the resistance of the heater element is determined and wherein said sensing excitation is a continuous DC excitation voltage floating with respect to said AC line voltage;

means for isolating said continuous sensing excitation voltage from said heater voltage when said heater voltage is being selectively provided to said first and second heater element terminals;

a four-leg bridge circuit means including said heater element as one leg thereof, responsive to said continuous sensing excitation voltage for providing a continuous reference voltage;

means for comparing said sensing excitation voltage at said heater element with said reference voltage for producing a continuous output representing the difference therebetween, and said comparing means rejecting said AC line voltage during the application of said heater voltage to said heater element and wherein said comparing means includes a first amplifier responsive to the reference voltage and a second amplifier responsive to the first amplifier output and the voltage at said heater element, said first and second amplifiers forming a high common mode range instrumentation amplifier; and

control means responsive to at least the output from said comparing means for the selective application of said heater voltage to said first and second heater element terminals and wherein the control means includes switch means for the selective application of the heater voltage to the heater element.

4,554,440

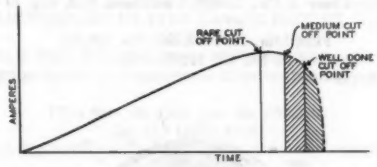
AUTOMATIC CIRCUIT CONTROL FOR ELECTRICAL RESISTANCE COOKING APPARATUS

Maurice W. Lee, Jr., P.O. Box 25, Boley, Okla. 74829

Continuation-in-part of Ser. No. 290,993, Aug. 7, 1981, abandoned. This application Aug. 8, 1983, Ser. No. 520,768

Int. Cl.[4] H05B *1/02*

U.S. Cl. 219—501 **11 Claims**



1. A food cooking control for an electric resistance cooker in which the magnitude of the RMS value of electrode current generated from an AC source passing through food interposed between electrodes increases until the food is substantially cooked, the improvement comprising: an electric supply circuit;

thyristor means arranged in series in the electric supply circuit for uninterruptedly supplying continuous cycle current to said electrodes while the food is cooking, said thyristor means including a gate control element having an electric gate voltage supply circuit;

switch means in said gate voltage supply circuit for selectively closing and opening the gate voltage circuit and respectively rendering said thyristor means conductive and nonconductive;

current detection means including a differentiating amplifier/comparator circuit connected with the electric supply circuit through a current transformer for sensing the rate of change of the RMS value of current through the food as a function of its cooked condition; and,

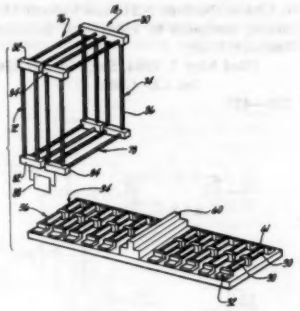
electric switch operator means including an electric circuit interposed between said current detection means and said switch means for opening the gate of the voltage supply circuit in response to a predetermined rate of change of the RMS value of the current through the food indicating the end of the cooking process and a selected cooking doneness of of the food.

4,554,441

ELECTRIC HEATING COIL

Roy C. Lueth, St. Clair, Mich., assignor to Ultra-Temp Corporation, Mt. Clemens, Mich.

Division of Ser. No. 567,769, Jan. 3, 1984, Pat. No. 4,512,558.
This application Feb. 19, 1985, Ser. No. 703,182
Int. Cl.[4] H05B 3/10
U.S. Cl. 219—552 1 Claim



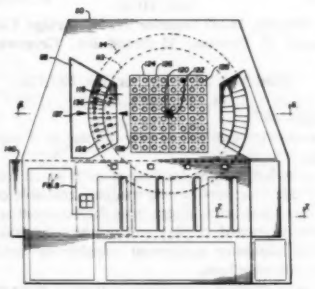
1. A heating coil for a metallurgical furnace comprising:
three sets of bus bar parts, each set comprising two aligned bus bar parts,
a unitary bus bar having a length substantially equal to the length of one set,
said sets and said unitary bus bar being spaced apart and parallel to each other and forming a parallelogram,
a pair of heating rods extending between each bus bar part and its aligned bus bar parts or unitary bus on its adjacent corners, and means for connecting a source of electrical power to the bus bar parts on the set diagonal from the unitary bus.

4,554,442

ALIQUOT PART LOCATOR

William L. Lest, San Francisco, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 24, 1985, Ser. No. 694,554
Int. Cl.[4] G06C 3/00
U.S. Cl. 235—88 R 4 Claims



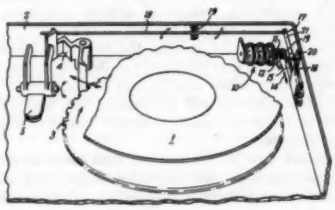
1. A device for locating aliquot parts of a parcel of land, said device comprising
a first rotatable disc
a second rotatable disc of a different size than said first disc
said first and second discs being mounted between front and back layers of sheet material, said first and second discs being rotatable relative to said sheet means about an axis passing through the geometric center of each disc;
said first disc having a pattern thereon formed by a plurality of holes therethrough;
said second disc having a pattern thereon formed by a plurality of holes therethrough;
said first and second discs each having a plurality of reference numbers located about the outer peripheral edge of each disc, each reference number corresponding to an aliquot part of a parcel of land, said aliquot parts being of equal area;
said front layer having a drawing corresponding to said parcel of land, said drawing having a pattern of lines drawn thereon representing lines dividing said parcel of land into said aliquot parts of equal area, each section of said drawing representing an aliquot part of said parcel of land having means defining a hole extending therethrough;
means on said sheet material for allowing the alignment of said reference numerals located about the outer peripheral edges of said sheets, in a predetermined position relative to a point on said sheet material;
said back layer of said sheet material having reference numerals corresponding to said reference numerals on said front and back disc located on a front side thereof;
means for assigning a reference numeral to each aliquot part of said parcel;
said front and back layers of sheet material and said discs being arranged so that, when said discs are rotated, at least one reference numeral on said outer peripheral edge of said first disc is aligned along the radius defined by said at least one reference numeral on said outer peripheral edge of said first disc and said geometric center with the corresponding reference numeral of same value on said second disc to form matching reference numerals and further said matching reference numerals are in said predetermined position relative to said sheet means, said patterns of holes on said first and second discs align so that one and only one of said reference numerals on the front of said back layer is visible through said holes in said front layer, said visible reference numeral being of the same value as said matching reference numerals, and the position of said hole in said front layer through which said one reference on the front of said back layer is visible corresponds to the location on said drawing of said aliquot assigned said reference numeral.

4,554,443

TAPE CASSETTES

Harry Lambert, and Margaret C. Lambert, both of Carriage Pl. 77500 Interstate 10, Indio, Calif. 92201

Filed May 17, 1983, Ser. No. 495,472
Claims priority, application United Kingdom, May 25, 1982, 8215181
Int. Cl.[4] G04B 37/00
U.S. Cl. 235—103 4 Claims



1. A magnetic tape cassette including a casing, a tape storage spool and a tape take-up spool, means in the casing for interacting with a cassette player, said interacting means including

means for undergoing mechanical motion when said cassette is inserted into or withdrawn from said cassette player, means for locking at least one of said spools in position when said cassette is not inserted in said cassette player and means located within said casing and mechanically linked to said interacting means and to said locking means for counting each time said cassette is subjected to a predetermined sequence of operations, said counting means including a set of cyclometer wheels for displaying a count, said casing including a window through which said counting on said wheels is visible, said counting means further including spring means set by movement of said locking means when said cassette is inserted into reproduction equipment and released to move a cyclometer wheel corresponding to the last significant digit by one unit when said cassette is removed from said cassette player.

4,554,444

AUTOMATIC BANK NOTE TRANSACTION APPARATUS

Minoru Hirose, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

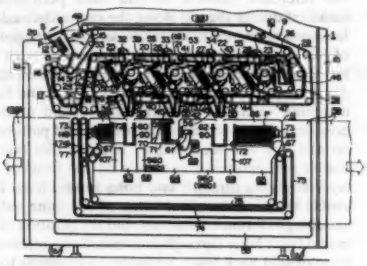
Division of Ser. No. 337,244, Jan. 5, 1982, Pat. No. 4,479,049. This application Feb. 16, 1984, Ser. No. 580,731

Claims priority, application Japan, Jan. 22, 1981, 56-8514; Jan. 22, 1981, 56-8525; Apr. 6, 1981, 56-51538

The portion of the term of this patent subsequent to Oct. 23, 2001, has been disclaimed.

Int. Cl.[4] G06F *15/30*

U.S. Cl. 235—379 **12 Claims**



1. An automatic bank note transaction apparatus comprising:

a housing including means for defining a cash inlet/outlet port;

conveyance means for successively conveying bank notes received in said cash inlet/outlet port;

first temporary collecting means for temporarily collecting the deposited bank notes conveyed by said conveyance means;

a return path for returning the bank notes collected in said first temporary collecting means to said cash inlet/outlet port;

a storage means for storing bank notes for withdrawl;

control means manipulable by a user for selectively alternately producing indicia of deposit approval, deposit disapproval and request for withdrawl;

distributing means for guiding the bank notes temporarily collected in the first temporary collecting means into said storage means when said control means produces indicia of deposit approval and, alternately, into said return path when said control means produces indicia of deposit disapproval; and

a withdrawl path for feeding the bank notes stored in said storage means to said cash inlet/outlet port when said control means produces said indicia of request for withdrawal,

whereby the bank notes temporarily collected in said first temporary collecting means are returned to said cash inlet/outlet port via said return path in response to said indicia of deposit disapproval, and transferred to said storage means to be used as bank notes for withdrawal in response to said indicia of deposit approval, and

the bank notes stored in the storage means are conveyed to said cash inlet/outlet port via said withdrawal path in response to said indicia of request for withdrawal.

4,554,445

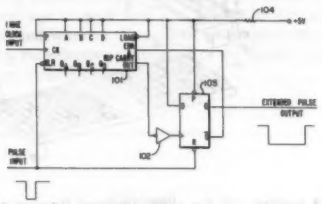
DIGITAL PULSE STRETCHER

Dennis W. Chasse, Nashua, N.H., and Vincent M. Clark, Kingsboro, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed May 7, 1984, Ser. No. 607,836

Int. Cl.[4] G06K *7/10*

U.S. Cl. 235—472 **17 Claims**



1. A digital pulse stretch circuit for adding a predetermined amount of time to the duration of the input pulse of a wand type or magnetic card reader, the input pulse having a rising edge and a trailing edge, said digital pulse stretcher comprising:

(a) a system clock for generating clock pulses;

(b) first means coupled to said wand type or magnetic card reader and to said system clock for counting the clock pulses applied to it and generating a first output signal after a predetermined number of counts;

(c) second means coupled to said first means and to said wand type or magnetic card reader and responsive to the trailing edge of the input pulse to activate said second means, and further responsive to the first output signal to deactivate said second means,

whereby the input pulse has been extended by the predetermined number of counts.

4,554,446

SUPERMARKET INVENTORY CONTROL SYSTEM AND METHOD

Arthur J. Murphy, 18337 Superior St., Northridge, Calif. 91325, and Joseph F. Stratton, 33 Broad Rd., Greenwich, Conn. 06830

Filed Nov. 18, 1983, Ser. No. 552,916

Int. Cl.[4] G06K *19/00*

U.S. Cl. 235—487 **15 Claims**

1. An inventory control system for use in a supermarket comprising:

a sales voucher printer located at each store for printing coded sale vouchers having machine readable codes,

a plurality of point of sale terminals each consisting of a cash register, keyboard, display and printer, and code reading machine scanning equipment capable of reading said coded sale vouchers,

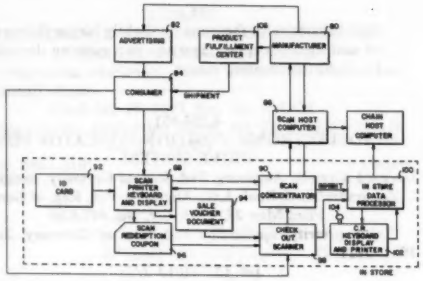
a single scan coupon concentrator at each store communicating with each code reading machine scanning equipment and in real time for continuously comparing coded sale voucher information at each sale terminal and for each sale transaction to determine compliance of all coded voucher conditions,

an in-store data processor controlling said cash register, keyboard, display and printer, and communicating with each code reading machine scanning equipment for con-

tinuously identifying, accumulating and processing all sales information from each point of sale terminal,

said scan coupon concentrator processing and accumulating all coupon redemption information and sale voucher information for every complete transaction at each point of sale terminal to determine compliance with coded conditions, transmitting coupon information, voucher information and, in the absence of compliance, an inhibit signal to said in-store data processor for crediting customer, collecting money, or indicating non-compliance,

a scan host computer located remotely from said supermarket periodically communicating with each scan coupon



concentrator in each store to receive accumulated sales voucher information for transmission to the manufacturer for processing, and

a chain host computer located remotely from said supermarket periodically communicating with each in-store data processor to receive accumulated total sales information including voucher sales information for that store and in which said scan host computer feeds accumulated voucher sales information received from all stores to said chain host computer thereby providing the central chain host computer with complete information as to voucher sales for reconciliation with information from all stores.

4,554,447

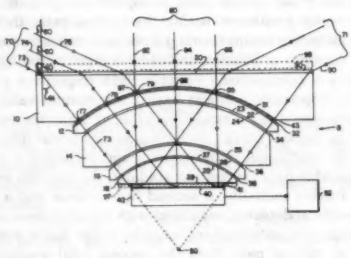
MULTI-ELEMENT SPECTRAL FILTER WITH CURVED INTERIOR SURFACES

James W. Howard, Natick, and David M. Reilly, Acton, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 28, 1983, Ser. No. 470,691

Int. Cl.⁴ H01J *3/14*

U.S. Cl. 250—216 **16 Claims**



1. Apparatus for optical spectral filtration of incident radiation from a desired field of view, which provides substantially uniform angular response over a desired spectral waveband ("in-band"), said apparatus comprising:

A. a first optical element having substantially low in-band absorption and having a substantially plano-concave shape which includes a first planar surface and a first concave surface and wherein said first concave surface has a given center of curvature, wherein such substantially low in-band absorption is substantially the same as that available by use of the material nickel sulfate hexahydrate;

B. one or more interior optical elements positioned between said first optical element and said given center of curvature, said interior element(s) having substantially concavo-convex shape(s) which includes a convex surface and a concave surface, and wherein the outer convex surface(s) and inner concave surface(s) of said interior element(s) are substantially concentric about said given center of curvature; and

C. a second optical element having substantially low in-band absorption and having a substantially plano-convex shape, which includes a second planar surface and a second convex surface, said second optical element positioned between said interior optical element(s) and said given center of curvature, wherein said second convex surface of said second element is substantially concentric about said given center of curvature and wherein said second planar surface is substantially parallel to said first planar surface of said first element.

4,554,448

OPTICAL ELEMENTS

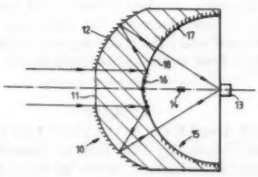
Hillary G. Sillitto, Edinburgh, Scotland, assignor to Ferranti, plc, London, England

Filed Apr. 25, 1983, Ser. No. 487,991

Claims priority, application United Kingdom, Apr. 27, 1982, 8211818

Int. Cl.⁴ H01J *3/14*

U.S. Cl. 250—216 **9 Claims**

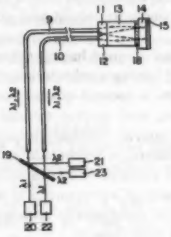


1. An optical element for location between a source of radiation and a detector thereof and arranged to focus radiation passing through an aperture therein on to the detector and to provide a reflective shield for the detector outside said aperture, which includes a first optical surface having a central area transparent to radiation incident thereon and a surrounding area reflective to radiation incident upon it from the direction of the detector, and a second optical surface spaced from the first optical surface towards the detector and having a first central area arranged to reflect radiation passing through the central area of the first surface towards the reflective area of the first surface, a second area surrounding the first area and through which said radiation reflected from the reflective area of the first surface may pass towards the detector, and an outer area reflective towards and concentric with the detector to provide a reflective shield for the detector.

4,554,449
FIBER OPTIC MAGNETIC FIELD SENSOR

Tetsuo Taniuchi, Katano, and Yoshinobu Tsujimoto, Kashiwara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 28, 1983, Ser. No. 490,136
Claims priority, application Japan, Apr. 30, 1982, 57-73603
Int. Cl.⁴ G02B *5/14*
U.S. Cl. 250—227 **9 Claims**



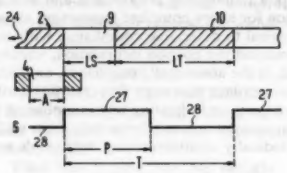
1. A fiber optic magnetic field sensor comprising:
a light emitting optical fiber, having a light emitting end, for guiding an input light beam;
a light receiving optical fiber, having a light receiving end, for guiding an output light beam;
A first rutile plate having a first polarization axis, said first rutile plate having one side surface attached to the light emitting end of said light emitting optical fiber, and a second side surface;
a second rutile plate, having a second polarization axis making an angle with respect to said first polarization axis, juxtaposed to said first rutile plate, said second rutile plate having one side surface attached to the light receiving end of said light receiving optical fiber, and a second side surface, said one side surfaces of said first and second rutile plates each facing the same direction;
a rod lens having one end attached to the second side surfaces of both said first and second rutile plates, and a second end;
a Faraday material member having one end surface attached to the second end of said rod lens, and a second end surface; and
a reflecting means, attached to the second end surface of said Faraday material member, for reflecting the input light beam toward said light receiving end of said light receiving optical fiber as the output light beam.

4,554,450
DEVICE FOR ANGLE OF ROTATION DETERMINATION

Ernst Goepel, Germering, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 23, 1982, Ser. No. 452,624
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1982, 3201163
Int. Cl.⁴ G01D *5/34*
U.S. Cl. 250—231 SE **5 Claims**

1. A light beam interrupting system for use in a device for determining an angle of rotation of a rotating member, comprising:
means for emitting a continuous beam of light:
means for receiving said beam of light having a light accepting aperture; and
light interrupting means, moving in conjunction with said rotating member, disposed in a plane perpendicular to said beam of light and between said means for receiving and means for emitting and having a plurality of regularly spaced light transmitting areas disposed in the path of said beam of light and which define light permeable areas and light impermeable areas, a width of said light permeable areas being less than a width of said light impermeable areas, and the width of said light permeable areas being at

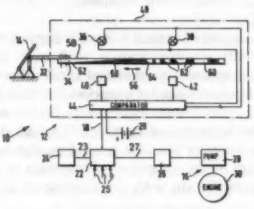


least substantially the same or slightly larger than a width of said light accepting aperture in a running direction of the light interrupting means.

4,554,451
OPTOELECTRONIC POSITION INDICATOR FOR A DRIVE SYSTEM

Gerhard Kirstein, Augsburg, Fed. Rep. of Germany, assignor to Zahnraderfabrik Renk A.G., Augsburg, Fed. Rep. of Germany

Filed May 25, 1983, Ser. No. 497,820
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1982, 3221621
Int. Cl.⁴ H01J *3/14*
U.S. Cl. 250—237 G **9 Claims**



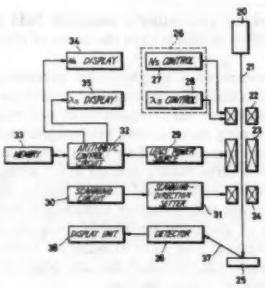
1. A position indicator system for monitoring an operator settable speed control element of a drive system, the drive system further including an engine, means for supplying fuel to the engine, and means operatively interconnecting the fuel supply means with the engine, the position indicator system including a light source, an electro-optical detector, the detector including means for generating an electrical signal as a function of the luminous intensity received from the light source along an optical path, an optical carrier, the optical carrier being positioned within the optical path, the optical carrier including means forming a position indicator range, the means forming a position indicator range including means providing a continuously variable light responsive gradient, the light responsive gradient having a minimum value at one end of the range and a maximum value at the other end of the range, the optical carrier including an additional information range, the additional information range including a continuously variable light responsive gradient, the position indicator system further including a second light source and a second electro-optical detector associated with the additional information range, the additional information range being positioned within an optical path from the second light source to the second detector and means interconnecting the speed control element and the carrier for providing translational movement of the carrier as a function of movement of the speed control element, the translational movement being in a direction coincident with the light responsive gradients, each detector generating a signal indicative of a measure of the light responsiveness of a zone of its respective range in registry with its optical path, the position indicator system further including a process-

ing circuit, means operably interconnecting each of the detectors to the processing circuit, the processing circuit including a comparator, the comparator receiving signals from each of the detectors and generating an output signal corresponding to the position of the speed control element, the drive system further including a microprocessor and means operably interconnecting the comparator with the microprocessor, the microprocessor receiving the output signal from the comparator and in response thereto generating a signal for controlling the fuel supply means, whereby fuel supply to the engine is controlled in response to the detected instantaneous position of the speed control.

4,554,452
METHOD AND APPARATUS FOR HANDLING CHARGED PARTICLE BEAM

Tadao Suganuma, Hachiouji, Japan, assignor to Elionix, Inc., Hachiouji, Japan

Filed Jul. 18, 1983, Ser. No. 514,632
Claims priority, application Japan, Jul. 22, 1982, 57-128136
Int. Cl.⁴ G01N *23/00*
U.S. Cl. 250—310 **6 Claims**



1. A method for handling a charged particle beam, comprising the steps of:

(a) effecting a relative movement of an object and the charged particle beam repeatedly in at least three directions within a plane transverse to the axis of the charged particle beam;

(b) adjusting the focus of the charged particle beam on the object to obtain signal particles derived from the object;

(c) detecting, on the basis of said signal particles, the focus adjusting values that minimize the cross-sectional component of the charged particle beam in the individual direction of the movement thereof on the object; and

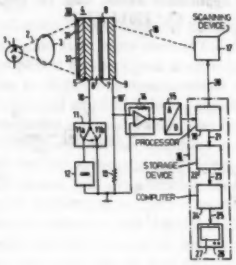
(d) computing, on the basis of the differences between the said values thus detected, at least one of a signal representing the astigmatism of the charged particle beam and a signal for correction of the astigmatism.

4,554,453
APPARATUS FOR RECORDING X-RAY IMAGES

Ingmar Feigt, Langensendelbach; Hans Heinrich, Erlangen, and Karl Kempter, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 28, 1984, Ser. No. 594,090
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1983, 3312264
Int. Cl.⁴ G01T *1/20, 1/24*
U.S. Cl. 250—327.2 **12 Claims**

1. An improvement to a solid image recording system of the type which contains first and second radiation-transmitting electrodes, first and second photoconducting layers each contacting a corresponding one of the electrodes, and a central charge-storing layer which is disposed between the photoconducting layers and which contacts both of them, wherein the first photoconducting layer is impinged by image rays and the second photoconducting layer is impinged by an optical ray moved in a scanning raster, the improvement comprising a luminophor which is associated with the first photoconductive

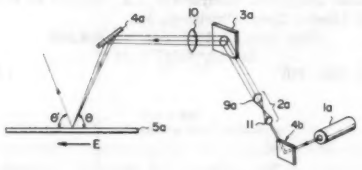


layer and transforms the image rays into light which is preferentially absorbed in the first photoconductive layer, the luminophor being located outside any electric field existing between the electrodes.

4,554,454
OPTICAL SYSTEM FOR SCANNING WITH LASER BEAM

Yutaka Taniguchi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 10, 1984, Ser. No. 569,559
Claims priority, application Japan, Jan. 10, 1983, 58-1951
Int. Cl.⁴ G03C *5/16*
U.S. Cl. 250—327.2 **4 Claims**

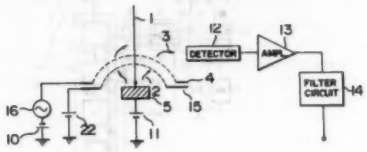


1. An optical system for scanning with a laser beam in a radiation image read-out system, comprising: a stimulable phosphor sheet carrying a radiation image stored therein, a gas laser beam source for emitting a gas laser beam which stimulates said stimulable phosphor sheet to release the radiation energy stored therein as light emission, scanning optical members for scanning the surface of said stimulable phosphor sheet with said laser beam emitted from said gas laser beam source, and a beam expander positioned between said scanning optical members and said gas laser beam source for adjusting the beam diameter of said laser beam, wherein the angle of the incident laser beam, which is directed by said scanning optical members onto the surface of said stimulable phosphor sheet, is set with respect to the surface of said stimulable phosphor sheet to an appropriate angle so that the direction of said incident laser beam is always different from the direction normal to the surface of said stimulable phosphor sheet, whereby the laser reflected by the surface of said stimulable phosphor sheet is prevented from being fed back along the same optical path as the optical path of said incident laser beam.

4,554,455
POTENTIAL ANALYZER

Hideo Todokoro, Tokyo, and Satoru Fukuhara, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 28, 1983, Ser. No. 518,112
Claims priority, application Japan, Aug. 16, 1982, 57-141119
Int. Cl.[4] H01J *37/26*
U.S. Cl. 250—305 8 Claims



1. A potential analyzer comprising:

detector means for detecting secondary electrons emitted from a specimen irradiated with a primary electron beam;

grid means disposed between said specimen and said detector means, said grid means including at least a grid electrode for determining a lower limit of the energy of the secondary electrons to be detected by said detector means;

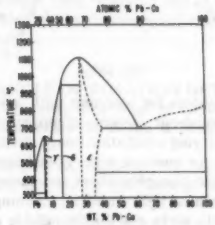
voltage source means for applying a voltage to said grid electrode which voltage varies within a predetermined range during the measurement of the potential of said specimen; and

circuit means for producing an average value of the output of said detector means during a period of time in which the voltage applied to said grid electrode varies.

4,554,456
SELF-POWERED GAMMA RESPONSES DETECTOR

M. Weston Hagadorn, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 13, 1982, Ser. No. 408,319
Int. Cl.[4] G01T *1/24*
U.S. Cl. 250—370 1 Claim

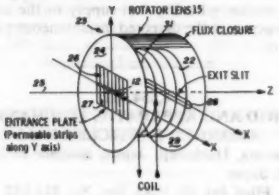


1. A self-powered nuclear radiation detector comprising an elongated center wire emitter which exhibits substantially solely gamma radiation response, insulating means disposed about the emitter wire, and a collector electrode coaxial about the emitter and insulating means, which emitter wire consists of an alloy of lead and calcium containing calcium in an amount of between 25 and 50 atom percent, which alloy has a maximized gamma phase and a minimized delta phase whereby the substantially solely gamma-response characteristic is retained, with the alloy exhibiting ductility and a melting point of at least 630° C.

4,554,457
MAGNETIC LENS TO ROTATE TRANSVERSE PARTICLE MOMENTA

Michael A. Kelly, Portola Valley, Calif., assignor to Surface Science Laboratories, Inc., Mountain View, Calif.

Filed Jul. 8, 1983, Ser. No. 512,418
Int. Cl.[4] H01J *37/26*
U.S. Cl. 250—396 ML 6 Claims



1. A magnetic lens for rotating the transverse particle momenta of a beam of charged particles passing therethrough while preserving the cross-sectional shape of the beam including:

magnet means for generating a magnetic field component axially directed of and within the beam of charged particles;

flux return means of a magnetically permeable material disposed surrounding said magnetic means for intercepting said axially directed components of said magnetic field and for returning same around said magnet means;

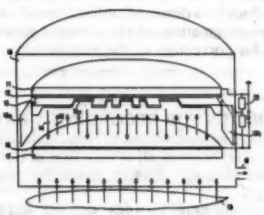
said flux return means including beam entrance and beam exit pole structures axially spaced apart along the beam path at opposite ends of said magnet means, and

said beam entrance pole structure including a beam permeable portion of magnetic permeable material for shaping the axial magnetic field so as to minimize transverse magnetic components thereof and through which said beam of charged particles enters the lens.

4,554,458
ELECTRON BEAM PROJECTION LITHOGRAPHY

Uwe Behringer, Ammerbuch; Harald Bohlen; Werner Kulcke, both of Boeblingen, and Peter Nehmiz, Stuttgart, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 20, 1984, Ser. No. 632,997
Claims priority, application European Pat. Off., Aug. 11, 1983, 83107926.4
Int. Cl.[4] H01J *37/317, 40/16*
U.S. Cl. 250—492.2 7 Claims



1. Apparatus for exposing a resist-coated wafer to a predetermined pattern of electrons, comprising;

a. A source of ultraviolet radiation;

b. A photoemissive cathode having a substrate transparent to U.V. radiation and a homogeneaus photoemissive coating on the substrate surface facing away from said source, and illuminated thereby, wherein the surface of said wafer coated with resist faces said cathode; and

c. An apertured mask having an aperture with a pattern of electron transparent and opaque regions corresponding to said predetermined pattern, the said mask being positioned spaced apart from the photemissive cathode and closely adjacent to said resist surface;

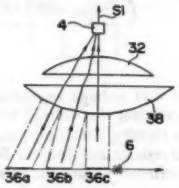
whereby the patterned beam of electrons passed by said mask will selectively alter the state of said resist to replicate said predetermined pattern.

4,554,459

MONITORING SYSTEM FOR A PREDETERMINED FIELD OF VIEW

Suteo Tsutsumi, and Hiroshi Koh, both of Kyoto, Japan, assignors to Fujitec Co., Ltd., Japan

Filed Dec. 15, 1981, Ser. No. 331,089
Claims priority, application Japan, Jan. 27, 1981, 56-10997
Int. Cl.⁴ G02B *13/18*; G08B *13/18*
U.S. Cl. 250—550 **8 Claims**



1. A condition detecting device for detecting various conditions within a predetermined field angle, said condition detecting device comprising:

(a) a spatial filter element including a solid poly-facet prism member having a convex face on the side of the fields of view with a plurality of plano facts cut into said convex face for permitting trasmittal of rays therethrough from an object to define respective separate fields of view for each facet;

(b) a single converging lens element for converging the rays which have passed through the spatial filter element;

(c) sensor means for sensing said rays converged by said converging lens element and for producing a signal having various features depending on the condition of said object; and

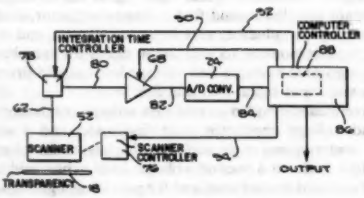
(d) descriminating means for discriminating one or more features of said signal.

4,554,460

PHOTODETECTOR AUTOMATIC ADAPTIVE SENSITIVITY SYSTEM

Raymond Klein, Cardiff, Calif., assignor to Kollmorgen Technologies Corp., Melville, N.Y.

Filed Jul. 2, 1982, Ser. No. 394,868
Int. Cl.⁴ H04N *1/04, 5/14*
U.S. Cl. 250—578 **18 Claims**



1. A system for generating a digital signal reflecting the intensity of light from a source comprising:

(a) photodetector means for receiving the light on an input surface thereof and for generating an analog signal at an output in proportion to the amount of incident light;

(b) light control means operably connected to said photodetector means for controlling the amount of time the light incident on said input surface is used for measurement purposes;

(c) amplification means operably connected to receive said analog signal at an input thereof for producing an adjustably amplified analog signal at an output thereof;

(d) analog to digital conversion means operably connected to receive said amplified analog signal at an input thereof for producing a digital value at an output thereof which reflects the value of said amplified analog signal; and

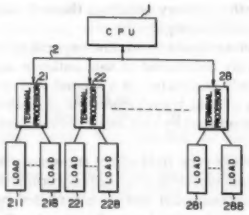
(e) logic control means operably connected to said light control means, said amplification means, and said analog to digital conversion means for receiving said digital signal, and for adjusting said amount of time light incident on said input surface is used for measurement purposes and for adjusting the gain of said amplification means necessary to have said analog to digital conversion means operate within a preselected portion of its range.

4,554,461

INFORMATION TRANSMITTING APPARATUS

Shigeru Oho, Hitachi; Fumio Hamano, Katsuta, and Takeshi Hirayama, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 22, 1983, Ser. No. 564,492
Claims priority, application Japan, Dec. 24, 1982, 57-225899
Int. Cl.⁴ H02G *3/00*
U.S. Cl. 307—40 **8 Claims**



1. Information transmitting system comprising:

a transmitting apparatus for transmitting information;

a receiving apparatus for receiving said transmission information;

a transmission line provided between said transmitting apparatus and said receiving apparatus; and

a load which operates in response to the output of said receiving apparatus;

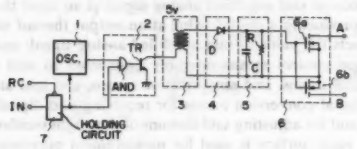
said transmitting apparatus including means for transmitting said information through the transmission line to said receiving apparatus in a predetermined time period and said receiving apparatus including means for allowing said load to operate on the basis of the transmission information received;

whereby said receiving apparatus further includes means for detecting the reception interval of the transmission information from the transmission line, including pulse generator means for generating pulses at a given time period and timer means for counting said pulses and for returning the count value thereof to an initial value in response to the reception of said transmission information, and means for generating an abnormality signal when said timer means has reached a count value indicating that said interval is equal to or greater than a predetermined time.

4,554,462
NON-POLARIZED CONTACTLESS RELAY

Hidetsugu Komiya; Michiya Inoue, and Yoshiyuki Saitoh, all of Hino, Japan, assignors to Fanuc Limited, Minamitsuru, Japan

Filed Mar. 11, 1983, Ser. No. 474,337
Claims priority, application Japan, Mar. 16, 1982, 57-36403[U]; Mar. 16, 1982, 57-36404[U]
Int. Cl.⁴ H03K *17/56*
U.S. Cl. 307—140 **2 Claims**



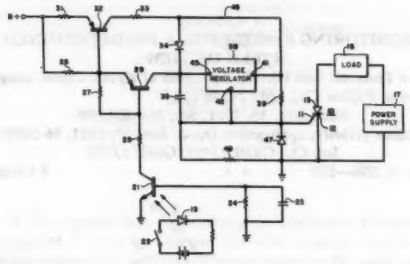
1. A non-polarized, contactless relay comprising:
a transformer having primary and secondary windings;
oscillator means for providing an oscillating signal;
an AND gate having a first input operatively connected to receive said oscillating signal, a second input and an output;
a transistor having a collector operatively connected a primary winding of said transformer, an emitter operatively connected to ground and a base operatively connected said output of said AND gate;
a diode having a anode operatively connected to a first end of said secondary transformer and a cathode, for rectifying A.C. power obtained from the secondary windings of said transformer in response to the oscillating signal applied to the primary windings thereof, said diode producing a rectified output;
a parallel connected resistor and capacitor, having a first end operatively connected to said cathode and a second end operatively connected to a second end of said secondary winding of said transformer, for smoothing the rectified output produced by said diode for delivering D.C. power; and
a pair of MOS-type field-effect transistors having interconnected gate electrodes operatively connected to said cathode, interconnected source electrodes operatively connected to said second end of said secondary winding and respective drain electrodes, said gate electrodes being driven by the D.C. power from said parallel connected resistor and capacitor; and
latch means having an input operatively connected to receive a command input and having an output operatively connected to said second input of said AND gate, for storing said command input and providing said command input as the output of said latch means.

4,554,463
TRIGGER CIRCUIT FOR SOLID STATE SWITCH

Dean K. Norbeck, York, and Harold R. Schnetzka, Spring Grove, both of Pa., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed May 26, 1983, Ser. No. 498,366
Int. Cl.⁴ H03K *17/72*
U.S. Cl. 307—252 H **2 Claims**

1. A trigger circuit for gating on an SCR having gate, cathode and anode terminals, where the SCR is subject to variations in its intrinsic gate-to-cathode control voltage requirements, said trigger circuit comprising:
a source of d-c supply voltage normally having a fixed magnitude but subject to undesired variations;
an integrated circuit voltage regulator having an input pin, an output pin and a ground pin;
means including the emitter-collector conduction path of a transistor for coupling said d-c supply voltage source to the input pin of said voltage regulator;
a resistor having one end connected to the output pin of said voltage regulator and the outer end connected to the ground pin and also to the SCR's gate terminal;
and actuating means for turning said transistor on to apply a d-c voltage, from said d-c supply voltage source, to the

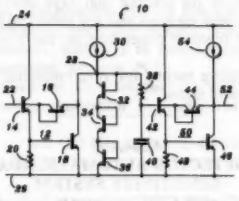


input pin of said voltage regulator which functions to maintain a constant d-c voltage between its output and ground pins, thereby translating constant d-c gate current through said resistor and from the SCR's gate terminal to its cathode terminal to turn the SCR on despite the presence of any unwanted variations in the d-c supply voltage or variations in the intrinsic gate-to-cathode control voltage requirements.

4,554,464
PROPAGATION DELAY GENERATOR

Robert B. Davies; Ira Miller, both of Tempe, and Robert N. Dotson, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 30, 1982, Ser. No. 413,051
Int. Cl.⁴ H03K *3/017, 5/04, 17/56*
U.S. Cl. 307—265 **6 Claims**



1. A propagation delay generator circuit having a first voltage conductor, a second voltage conductor, an input conductor responsive to an input signal having a first and a second level, and an output conductor, for generating a delayed digital output signal responsive to said input signal, comprising:
input means coupled to said first voltage conductor, said second voltage conductor, said input conductor, and a first node, and responsive to said input signal for initializing a charging signal having a first voltage level at said first node when said input signal is at said first level;
capacitive means coupled to said first voltage conductor, said second voltage conductor, said first node, and a second node, and responsive to said charging signal for charging said first node to a second voltage level when said input signal is at said second level and for providing a gating signal having a third voltage level at said second node subsequent to receiving said charging signal; said capacitive means comprising:
a current source coupled between said first voltage conductor and said first node;

a resistor coupled between said first node and said second node; and

a capacitor coupled between said second voltage conductor and said second node;

voltage level means coupled between said first node and said second voltage conductor for establishing said second voltage level at said first node; and

output means coupled to said first voltage conductor, said second voltage conductor, and said second node, and responsive to said gating signal for providing said output signal.

4,554,465

4-PHASE CLOCK GENERATOR

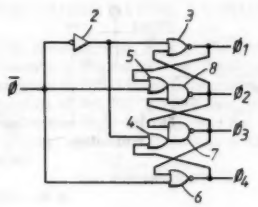
Hideharu Koike, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 27, 1983, Ser. No. 565,653

Claims priority, application Japan, Dec. 27, 1982, 57-234055

Int. Cl.⁴ H03K *3/037, 5/15*

U.S. Cl. 307—269 **11 Claims**



1. A 4-phase clock generator for producing four clock signals responsive to first and second master clock signals comprising:

first gate means having first and second inputs and an output for outputting a first clock signal;

second gate means having first, second and third inputs and an output for outputting a second clock signal, the first input of the second gate means being connected to the output of the first gate means and the output of the second gate means being connected to the second input of the first gate means;

third gate means having first, second and third inputs and an output for outputting a third clock signal, the first input of the third gate means being connected to the output of the second gate means and the output of the third gate means being connected to the third input of the second gate means; and

fourth gate means having first and second inputs and an output for outputting a fourth clock signal, the first input of the fourth gate means being connected to the output of the third gate means, the output of the fourth gate means being connected to the third input of the third gate means; and

said first master clock signal being inputted to the first input of the first gate means and to the second input of the third gate means, said second master clock signal being complementary to the first master clock signal and being inputted to the second inputs of the second and fourth gate means, the logic levels of first, second, third and fourth clock signals changing in sequential order after the first master clock signal changes from a first logic level to a second logic level and after the second master clock signal changes from the second logic level to the first logic level and the logic levels of first, second, third and fourth clock signals changing in reverse sequential order after the first master clock signal changes from the second logic level to the first logic level and after the second master clock signal changes from the first logic level to the second logic level.

4,554,466

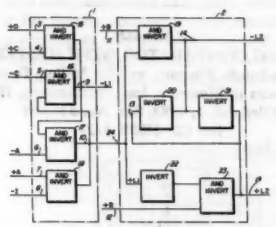
EDGE-TRIGGERED LATCH CIRCUIT CONFORMING TO LSSD RULES

Gary E. Dillon, Tucson, Ariz., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 1, 1982, Ser. No. 445,888

Int. Cl.⁴ H03K *3/284, 17/56*

U.S. Cl. 307—272 A **7 Claims**



1. An integrated circuit latch configuration conforming to level sensitive scan design rules including:

a first polarity hold latch having a data input, an input for receiving a first clock pulse train, another input for receiving a second clock pulse train, and an output,

a second polarity hold latch having an input connected to the output of said first polarity hold latch, an input for receiving a third clock pulse train, and an output,

gate means connected to the second clock pulse train input for disabling the third clock pulse train input to the second latch when a data pulse is transferred to the first latch, and

circuit means connected to the second clock pulse train input for enabling the third clock pulse train input to the second latch when the data pulse and the second clock train pulse terminate, whereby data is positively transferred from the first latch to the second latch.

4,554,467

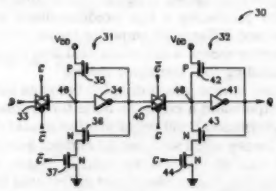
CMOS FLIP-FLOP

Herchel A. Vaughn, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 22, 1983, Ser. No. 506,959

Int. Cl.⁴ H03K *3/289, 17/04, 19/003*

U.S. Cl. 307—279 **6 Claims**



1. A CMOS flip-flop, comprising:

a first controllable switch, having an input for receiving an input signal, and an output, for coupling the input signal to the output when a clock signal is at or near a voltage present at a first power supply terminal and for preventing the input signal from reaching the output when the clock signal is at or near a voltage at a second power supply terminal;

a first inverter having an input coupled to the output of the first controllable switch, and an output;

a first P channel transistor having a first current electrode directly connected to the first power supply terminal with no intervening elements therebetween, a control electrode coupled to the output of the first inverter, and a second current electrode directly connected to the input of the first inverter with no intervening elements therebetween;

a first N channel transistor having a first current electrode coupled to the input of the first inverter, a control electrode coupled to the output of the first inverter, and a second current electrode; and

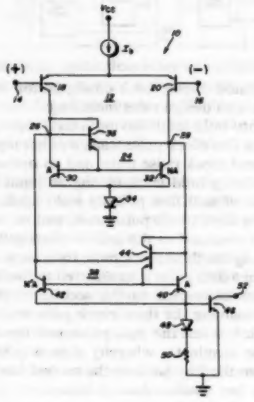
a second N channel transistor having a first current electrode coupled to the second current electrode of the first N channel transistor, a control electrode for receiving a signal complementary to the clock signal, and a second current electrode coupled to the second power supply terminal.

4,554,468

LATCHING COMPARATOR WITH HYSTERESIS

Robert C. Rumbaugh, Phoenix, and Ira Miller, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 1, 1983, Ser. No. 510,044
Int. Cl.⁴ H03K *5/24*
U.S. Cl. 307—355 **9 Claims**



1. A self latching comparator circuit having hysteresis, comprising:

differential amplifier means having first and second inputs and first and second outputs, said first and second inputs being responsive to a differential signal applied thereacross;

first current mirror means coupled to said first and second outputs for producing a first predetermined input offset voltage in said differential amplifier means when said first current mirror means is activated, said first current mirror means including first transistor means;

second current mirror means coupled between said first and second outputs and a common node for producing a second predetermined input offset voltage in said differential amplifier means when said second current mirror means is activated, said second current mirror means being activated when the magnitude of said differential input signal incrementally exceeds said first predetermined input offset voltage in a positive sense for regeneratively inactivating said first current mirror means and said first current mirror means being activated when the magnitude of the differential input signal incrementally exceeds said second input offset voltage in a negative sense for regeneratively inactivating said second current mirror means, said second current mirror means including second transistor means;

first means for preventing said first transistor means from saturating when said first current mirror means is activated;

second means for preventing said second transistor means from saturating when said second current mirror means is activated; and

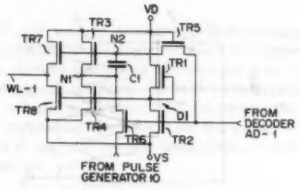
output circuit means coupled to said common node for causing a voltage level at an output thereof to switch between first and second output level states after said first and second current mirror means are respectively activated.

4,554,469

STATIC BOOTSTRAP SEMICONDUCTOR DRIVE CIRCUIT

Makoto Segawa, and Shoji Arizumi, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 25, 1983, Ser. No. 469,631
Claims priority, application Japan, Feb. 26, 1982, 57-29905
Int. Cl.⁴ H03K *17/06, 19/094*
U.S. Cl. 307—482 **15 Claims**



1. A semiconductor circuit comprising:

a trigger terminal;

a short pulse generation circuit having an output terminal for providing a short pulse in response to a trigger signal supplied to said trigger terminal; and

a static bootstrap circuit comprising an input terminal and an output terminal, first and second voltage source terminals, a first MOS transistor having a gate to which a predetermined voltage is applied and a current path which is connected at a first terminal to said input terminal, a MOS inverter for inverting an input signal supplied to said input terminal with a predetermined period of delay time, a second MOS transistor having the gate connected to the output terminal of said MOS inverter and the current path connected at a first terminal thereof to said second voltage source terminal, a third MOS transistor having the current path connected between said second voltage source terminal and said output terminal and the gate connected to the output terminal of said MOS inverter, a fourth MOS transistor having the gate connected to the second terminal of the current path of said first MOS transistor and the current path connected between said first voltage source terminal and said output terminal, a fifth MOS transistor having the gate connected to a second terminal of the current path of said first MOS transistor and the current path connected between said first voltage source terminal and a second terminal of the current path of said second MOS transistor, capacitive means connected between the gate of said fifth MOS transistor and the connection point between said second and fifth MOS transistors, and potential setting means connected to the output terminal of said short pulse generation circuit and to the connection point between said second and fifth MOS transistors to set the potential on the connection point between said second and fifth MOS transistors to a predetermined potential level in response to a short pulse generated from said short pulse generation circuit.

4,554,470
POLYBUTADIENE VPI RESIN

Donald D. Jerson, Norvelt, and James F. Chance, Turtle Creek, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 8, 1984, Ser. No. 618,841
Int. Cl.[4] H02K *15/12*
U.S. Cl. 310—45 **13 Claims**

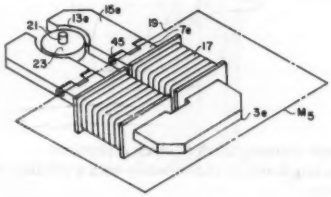
1. An electrical article comprising a coil of insulated elongated conductors impregnated with a resin which comprises:
(A) polybutadiene, at least about 15% of which is 1,2-polybutadiene;
(B) about 10 to about 150 phr dicyclopentadiene acrylate;
(C) about 0.005 to about 0.75 phr free radical polymerization inhibitor;
(D) about 0.05 to about 2.5 phr free radical polymerization initiator; and
(E) up to about 2.0 phr coupling agent.

4. An article according to claim 1 wherein said insulated elongated conductors is a motor or generator winding.

4,554,471
ELECTRIC MOTOR HAVING A U-SHAPED STATOR IRON

Leo Bertram, Stolberg, Fed. Rep. of Germany; Hugo Schemmann, Schaesberg, and Jan de Boer, Drachten, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 571,284, Jan. 16, 1984,. This application Mar. 13, 1985, Ser. No. 710,940
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1983, 3301263
Int. Cl.[4] H02K *31/00*
U.S. Cl. 310—49 R **24 Claims**



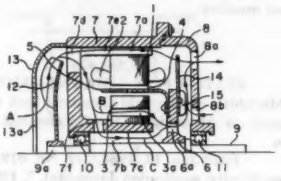
1. An electric motor which comprises a rotor having a shaft and a U-shaped stator having two shanks, each shank having a free end, said motor also including induction coils disposed around each of said shanks, each of said shanks being formed to define pole shoes between the free ends of each of said shanks and said induction coil disposed on that shank, said U-shaped stator having the major portion thereof configured so that an imaginary central plane extends through all of said stator except the free ends of said shanks, each of said shanks in the area between said pole shoes and said coils being bent with respect to said central plane in such a manner that said shaft encloses with said central plane an angle which is less than 90°.

4,554,472
LOW INERTIA INDUCTION MOTOR

Hiroshi Kumatani, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 14, 1983, Ser. No. 504,165
Claims priority, application Japan, Jun. 14, 1982, 57-88272
Int. Cl.[4] H02K *9/06*
U.S. Cl. 310—62 **7 Claims**

1. A low inertia induction motor which comprises in combination:
a yoke disposed in confrontation to a stator core, around which a stator winding is wound, forming a space between said yoke and said stator winding;
a frame with a through-hole being formed at the center portion thereof and a supporting portion to support said yoke and said stator core;
a rotary disc having an air passage formed therein and radially extending between said yoke and an axial end portion of said frame;
a rotor rotatably supported on a first side of said rotary disc and positioned within said space;
a rotational shaft extending into said through-hole of said frame and being supported in a freely rotatable manner;
a cooling fan fixedly secured to said rotational shaft and feeding cooling air into the interior of said frame through the revolution of said rotational shaft wherein said frame and said stator core form a through-hole through which

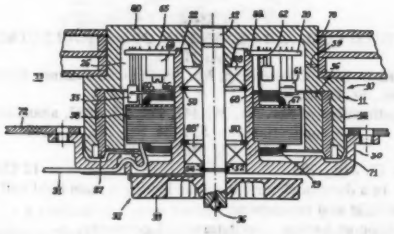


cooling air is fed into the interior of said frame by means of said cooling fan from outside said frame and said yoke has a through-hole formed therein to pass cooling air introduced into the interior of said frame by said cooling fan; and
an air discharge fan mounted on a second side of said rotary disc opposite said first side of said rotor, said axial end portion of said frame including an air intake port for drawing air thereinto by said air discharge fan and an air discharge port formed therein such that air drawn through said air passage formed in said rotary disc is accelerated in a radial direction toward an outer periphery of said rotary disc.

4,554,473
BRUSHLESS DIRECT CURRENT MOTOR SYSTEM

Rolf Müller, Black Forest, Fed. Rep. of Germany, assignor to Papst-Motoren GmbH & Co. KG, Black Forest, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 244,971, Mar. 18, 1981, abandoned. This application Feb. 17, 1984, Ser. No. 581,337
Claims priority, application Switzerland, May 10, 1980, 3658/80
Int. Cl.[4] H02K *21/12*
U.S. Cl. 310—67 R **21 Claims**



1. A brushless direct current motor system, said system including an outer rotor type motor, comprising:
a cup-shaped rotor housing having a shaft concentrically mounted therein extending internally thereof, the outer portion of said housing being formed as a drive boss to receive at least one load member for the direct driving thereof;

a bearing system in said motor receiving said shaft so as to rotate said rotor housing;

stator means concentrically mounting said bearing system within said motor, said rotor housing being mounted to rotate around the periphery of said stator means and separated by an air gap; and

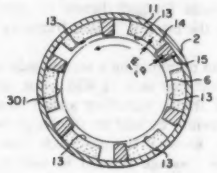
at least one stationary electronic circuit support means mounted inside the closed end of said cup-shaped rotor housing axially between the stator and said closed end and having a diameter not greater than that of the air gap, the outside of said rotor housing at its closed end being provided with a step-wise reduction in the outer diameter thereof, allowing the outside of this portion of the rotor housing to serve as a hub for mounting and driving the load member.

4,554,474

STATOR FOR A MAGNET MOTOR

Akira Morishita, and Kyoichi Okamoto, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1984, Ser. No. 619,988
Claims priority, application Japan, Jul. 7, 1983, 58-106090[U]
Int. Cl.⁴ H02K *21/26*
U.S. Cl. 310—154 **4 Claims**



1. A stator for a magnetic motor comprising a cylindrical yoke, at least one pair of main magnetic poles formed of permanent magnets fixed to the inner peripheral surface of said yoke, at least one pair of auxiliary magnetic poles made of a soft iron material each placed at a side portion of each of said main magnetic poles, characterized in that an air gap formed between the inner peripheral surface of each of said main magnetic poles and the outer peripheral surface of an armature rotatably placed at the axial center of said yoke is made greater than an air gap formed between the inner peripheral surface of each of said auxiliary magnetic poles and the outer peripheral surface of said armature.

4,554,475

FIELD COIL AIR VENTS FOR DYNAMOELECTRIC MACHINE

Hollis D. Sisk, Chesterfield, Mo., assignor to Century Electric, Inc., St. Louis, Mo.

Continuation of Ser. No. 352,447, Feb. 25, 1982, abandoned.
This application Jun. 5, 1984, Ser. No. 617,240
Int. Cl.⁴ H02K *1/32*
U.S. Cl. 310—208 **12 Claims**

1. In a dynamoelectric machine having a main field coil, the main field coil comprising:

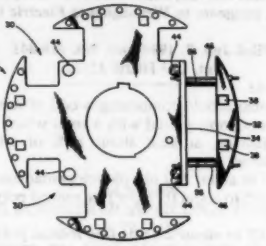
a support having a predetermined geometry,

a solid strand electrical wire wound about said support to form a coil of wire,

coil head air vents of predetermined width interspaced in said wound electrical wire in the head of said coil,

means for forming said air vents,

means for temporarily supporting the forming means at least partially in said air vents, said forming means having means to hold successive turns of said electrical wire parallel to each other as said wire is wound about said support so that said coil is free from cross-overs, and



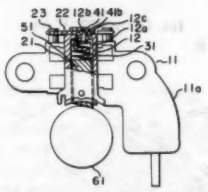
means to remove said forming means from said coil head air vents by separating the forming means from said temporary support means.

4,554,476

BRUSH-RETAINING DEVICE

Hitoshi Gotoh, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1984, Ser. No. 642,210
Claims priority, application Japan, Sep. 6, 1983, 58-139367[U]
Int. Cl.⁴ H02K *13/00*
U.S. Cl. 310—239 **4 Claims**



1. A brush-retaining device which comprises:

a conducting brush in slide-contact with a rotating conduction part,

a conducting lead wire having one end connected to said conducting brush and the other end connected to a connecting terminal of the brush retaining device,

a brush holder provided with a cavity for receiving said brush and said lead wire in a movable manner and with a draw-out hole for lead wire, and

an insulating cover for covering the entirety of said draw-out hole and at least a part of said lead wire, said insulating cover being provided with an elastically engaging part fittable to said brush holder means for permitting a passage of said lead wire through said insulating wire through said insulating cover.

4,554,477

DRIVE CIRCUIT FOR A PLURALITY OF ULTRASONIC GENERATORS USING AUTO FOLLOW AND FREQUENCY SWEEP

Henry K. Ratcliff, 14 Hadfield Ave., Hoylake, Wirral, Merseyside L47 3DJ, England

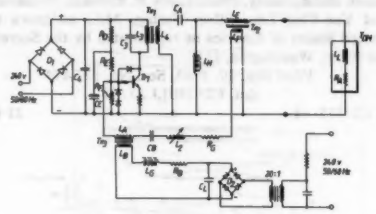
Filed Nov. 25, 1983, Ser. No. 554,908
Int. Cl.⁴ H01L *41/08*
U.S. Cl. 310—316 **4 Claims**

1. An ultrasonic generator for driving a plurality of ultrasonic transducers, comprising:

an electronic oscillator which provides an A.C. signal for driving said transducers;

autofollow means, responsive to the current supplied to the

transducers, for varying the oscillator frequency to maintain the transducer current at a maximum level; and



frequency sweep means, which operates independently of said autofollow means, for cyclically sweeping between upper and lower limits the oscillator frequency determined by said autofollow means.

4,554,478

PHOTOELECTRIC CONVERSION ELEMENT

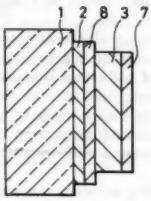
Yasuharu Shimomoto, Tokyo; Yasuo Tanaka, Kokubunji; Yukio Takasaki, Hachioji; Sachio Ishioka; Toshihisa Tsukada, both of Tokyo, and Toru Baji, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 226,879, Jan. 21, 1981, abandoned. This application May 25, 1983, Ser. No. 497,841

Claims priority, application Japan, Jan. 21, 1980, 55-4622

Int. Cl.⁴ H01J *31/38*

U.S. Cl. 313—366 **9 Claims**



1. In a photoelectric conversion element including at least a first electrode and a photoconductive layer having an amorphous material whose indispensable constituent is silicon and which contains hydrogen as an essential constituent element on a predetermined substrate, the improvement wherein said layer of the amorphous material is disposed on said first electrode via a light transmitting or semi-light transmitting metallic film for adhesion relative to said amorphous material, and said metallic film for adhesion consists of a metallic layer consisting essentially of at least one element selected from the group consisting of Ta, Cr, W, Nd, Mo, V and Ti.

4,554,479

CATHODE-RAY TUBE HAVING A LOW POWER CATHODE ASSEMBLY

Stephen T. Opresko, Manor Township, Lancaster County, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 8, 1983, Ser. No. 559,378

Int. Cl.⁴ H01J *31/02*

U.S. Cl. 313—417 **11 Claims**

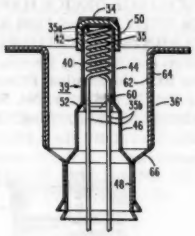
1. In a cathode-ray tube having an electron gun including at least one cathode assembly comprising

a cathode sleeve having oppositely disposed ends, said cathode sleeve being open at one end and closed at the other end, said closed end including a cap having an electron emitting coating thereon,

a heater filament disposed within said sleeve, said heater filament having a heater body portion with a pair of heater legs extending therefrom, and

a cathode eyelet disposed around at least a portion of said cathode sleeve and attached thereto, the improvement wherein

said cathode sleeve comprises a longitudinally extending first portion having a first diameter conforming closely to said heater body portion of said heater filament for reducing the power requirement thereof, and at least one other longitudinally extending portion having a diameter greater than said first diameter, said first portion and said



other portion being connected by a transition region inclined at an obtuse angle to said longitudinally extending first portion, and

a plurality of openings in said transition region, said openings having an effective length in the longitudinal direction less than their actual length along the inclined transition region and a lateral dimension greater than the effective length thereof, said openings providing a heat dam to restrict the conduction of heat along the sleeve while limiting the radiative heat loss through said openings from said heater legs disposed within said cathode sleeve due to reduced effective length of said openings.

4,554,480

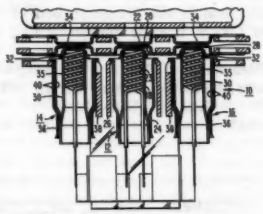
CATHODE-RAY TUBE HAVING AN ELECTRON GUN ASSEMBLY WITH EMISSIVITY MODIFYING MEANS

Richard E. Schlack, Lower Winsor Township, York County, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 29, 1983, Ser. No. 556,184

Int. Cl.⁴ H01J *19/14, 29/46*

U.S. Cl. 313—446 **4 Claims**



1. In a cathode-ray tube having an electron gun assembly including a plurality of cathode assemblies each comprising

a cathode sleeve having oppositely disposed ends, said cathode sleeve being open at one end and closed at the other end by a cap having an electron emissive material thereon,

a heater filament disposed within said sleeve and spaced therefrom, and

a cathode eyelet coaxially surrounding at least a portion of said cathode sleeve, said eyelet having an interior surface and an exterior surface, said open end of said cathode

sleeve being attached to said interior surface of said eyelet, the improvement wherein

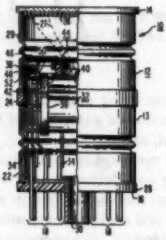
at least a portion of said interior surface of at least one of said eyelets includes emissivity modifying means to change the radiant energy emission characteristic of said portion of said interior surface to be different from the radiant energy emission characteristic of a similar portion of at least one other of said eyelets wherein said emissivity modifying means comprises an oxide coating formed on at least the interior surface of said cathode eyelets to increase the emissivity thereof.

4,554,481

ELECTRON DISCHARGE DEVICE HAVING A CERAMIC MEMBER WITH MEANS FOR REDUCING LUMINESCENCE THEREIN

Richard D. Faulkner, and James L. Rhoads, both of Lancaster, Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Oct. 28, 1983, Ser. No. 546,536
Int. Cl.[4] H01J *31/48, 43/28*
U.S. Cl. 313—533 **3 Claims**



1. In an electron discharge device comprising an evacuated envelope including at least one alumina ceramic insulator member,

a source of electrons within said envelope,

an anode spaced from said source of electrons, and

means for propagating and concatenating electron emission from said source to said anode,

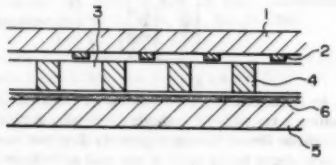
the improvement wherein said ceramic insulator member includes means for reducing luminescence therein, said means comprising an opaque high resistance material diffused into said ceramic insulator member.

4,554,482

DC TYPE GAS DISCHARGE DISPLAY PANELS

Takeo Kamegaya, and Satoshi Watanabe, both of Tokyo, Japan, assignors to Okaya Electric Industries Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1981, Ser. No. 321,965
Claims priority, application Japan, Apr. 28, 1981, 56-64621
Int. Cl.[4] H01J *61/06*
U.S. Cl. 313—582 **3 Claims**



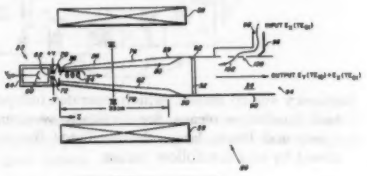
1. A DC type gas discharge display panel having a cathode comprised of a mixture of a tetra- or hexa-boride of a rare earth element or a mixture thereof, and molybdenum, tungsten, aluminum with a thin film of aluminum oxide provided on the surface thereof, or a mixture thereof.

4,554,483

ACTIVE CIRCULATOR GYROTRON TRAVELING-WAVE AMPLIFIER

J. Mark Baird, Sandy, Utah; Larry R. Barnett, Manassas, Va., and Yue-Ying Lau, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 29, 1983, Ser. No. 537,474
Int. Cl.[4] H01J *25/00*
U.S. Cl. 315—4 **21 Claims**



1. An RF traveling-wave amplifier comprising:

a tapered interaction waveguide wherein the cross-section thereof gradually increases from a small first end to a larger second end for propagating electromagnetic energy in a broad frequency band therein, said interaction waveguide supporting first and second orthogonal polarization modes therein with approximately the same propagation characteristic for said first and second modes;

means for generating a beam of relativistic electrons with helical electron motion and for directing said beam into said interaction waveguide through said small first end to axially propagate toward said larger second end of said interaction waveguide;

means for generating a tapered magnetic field within said interaction waveguide in a direction approximately parallel to the axis of said interaction waveguide and for profiling said magnetic field to near grazing interaction with said second polarization mode of said waveguide;

means disposed in said interaction waveguide for loading said first polarization mode relative to said second polarization mode;

means for launching an input electromagnetic wave of said first polarization mode into said interaction waveguide at said larger second end to propagate toward said smaller first end such that various different frequency components of said input wave will be reflected at various points along the constriction of said tapered interaction waveguide, said reflected input wave exciting said second polarization mode in said interaction waveguide such that said first and second polarization modes copropagate with said electron beam and are amplified thereby, the portion of said reflected wave in said second polarization mode being amplified to a greater extent than the portion of said reflected wave in said first polarization mode.

4,554,484

COMPLEX CAVITY GYROTRON

Michael E. Read, Oakton, Va.; Yuval Carmel, Haifa, Israel; Kwo R. Chu, Annandale, and Achintya K. Ganguly, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

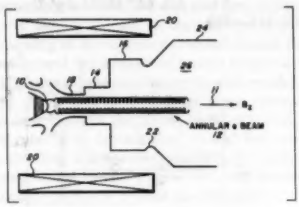
Filed Aug. 29, 1983, Ser. No. 527,626
Int. Cl.[4] H01J *25/00*
U.S. Cl. 315—4 **15 Claims**

1. A complex cavity gyrotron comprising:

means for generating and directing an electron beam along an axis;

a cavity disposed axially with said electron beam axis such that said electron beam passes therethrough, said cavity having at least a first and a second adjacent axial sections coupled to facilitate axial mode continuation therebe-

tween, with the dimensions of said axial sections adjusted so that a first mode of a first frequency is resonant in said first axial section and a second mode of said first frequency is resonant in said second axial section simultaneously with said first and second modes having the same azimuthal eigen number but different radial eigen numbers; and



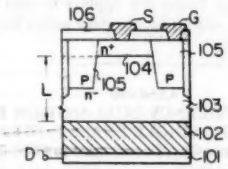
means for generating an axially directed magnetic field within said cavity.

4,554,485

SOLID-STATE IMAGE DISPLAY DEVICE

Takahiro Yamada, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 17, 1983, Ser. No. 495,413
Claims priority, application Japan, May 20, 1982, 57-85841
Int. Cl.⁴ H01J *7/44*
U.S. Cl. 315—169.3 **4 Claims**



1. A solid-state image display device comprising:

a phosphor region acting as a drain region and formed on a surface of a semiconductor substrate having a low impurity density,

a carrier supply region of a first conduction type, having a high impurity density and formed on another surface of said semi-conductor substrate, opposite to said surface having said phosphor region formed thereon, and

a gate region of a second conduction type formed on said another surface of said semiconductor substrate, for controlling an amount of carriers injected from said carrier supply region into said semiconductor substrate, wherein said carriers injected from said carrier supply region into said semiconductor substrate reach said phosphor region by running in a non-scattered manner such that a running distance of said carriers is shorter than a mean free path thereof, thereby causing light emission from said phosphor region.

4,554,486

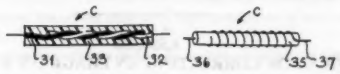
IGNITION TRANSFORMER WITH PASSIVE VOLTAGE AND CURRENT MULTIPLYING MEANS

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

Filed Oct. 18, 1984, Ser. No. 663,329
Int. Cl.⁴ H05B *37/02, 39/04, 41/36*
U.S. Cl. 315—209 R **27 Claims**

1. An ignition transformer having a secondary winding, characterized by:

a distributed capacity component having first and second ends, said component constituting a pair of electrical insulation-clad transposed wires comprising first and second wires, said first wire being coupled to the secondary winding at the first end and being unterminated at the second end, said second wire being coupled to the secondary winding at the second end and being unterminated at the first end, said electrical insulation constituting dielectric material for said distributed capacity component.

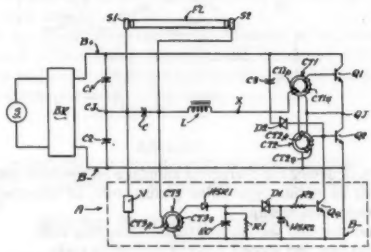


4,554,487

ELECTRONIC FLUORESCENT LAMP BALLAST WITH OVERLOAD PROTECTION

Ole K. Nilssen, Caesar Dr., R.R.-5, Barrington, Ill. 60010

Filed May 17, 1983, Ser. No. 495,540
Int. Cl.⁴ H05B *41/24*
U.S. Cl. 315—224 **15 Claims**



1. An arrangement for powering a gas discharge lamp, said arrangement comprising:

a source of DC voltage;

an inverter connected with said source of DC voltage and operable to provide an AC voltage at an output, said inverter having a disable-means operative on receipt of a disable-signal to disable inverter operation and thereby to remove said AC voltage from said output;

a series-combination of an inductor and a capacitor, said series-combination connected in circuit across said output and being substantially series-resonant at the fundamental frequency of said AC voltage;

means for connecting said gas discharge lamp in parallel-circuit with said capacitor, said gas discharge lamp requiring for proper functioning an initial starting-voltage of relatively large magnitude and a subsequent operating-voltage of relatively low magnitude, said starting-voltage having to be present across said lamp for a length of time that is not longer than a certain maximum-period;

voltage-clamping-means connected in parallel-circuit with said capacitor, said voltage-clamping-means being: (i) operative to limit the magnitude of the voltage across said capacitor to a maximum level, said maximum level being not lower than said relatively large magnitude, and (ii) substantially non-conductive at voltages of magnitudes not higher than said relatively low magnitude;

current-sensing-means connected in circuit with said voltage-clamping-means and operative to sense the clamping-current flowing therethrough and to provide a clamping-signal-output in response to said clamping-current; and

integration-means connected in circuit between said clamping-signal-output and said disable-means, said integration-

means being operative to provide said disable-signal to said disable-means whenever said clamping-signal-output has been present for a length of time that is not shorter than said maximum-period;

whereby, if said lamp fails to start within said length of time, said inverter is rendered disabled.

4,554,488

DEVICE FOR CORRECTING AN IMAGE ON A PICTURE TUBE HAVING IN-LINE ELECTRON GUNS AND A COIL ASSEMBLY FOR THE DEVICE

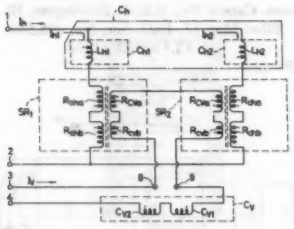
Toshio Kobayashi, Noda, and Hideo Hishiki, Iwai, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jun. 11, 1982, Ser. No. 387,434

Claims priority, application Japan, Jun. 14, 1981, 56-91275; Jul. 17, 1981, 56-111650; Jan. 7, 1982, 57-769[U]

Int. Cl.⁴ H01J *29/70, 29/76*

U.S. Cl. 315—368 **16 Claims**



1. A device for correcting an image on a picture tube for use with an in-line type color picture tube of self-convergence system, comprising:

(a) first and second horizontal deflecting coils;

(b) first and second vertical deflecting coils;

(c) a first saturable reactor having first and second coils connected in series in opposite directions, third and fourth coils connected in series in the same direction, an H-shaped, open magnetic path type core for said first through fourth coils, and a permanent magnet for magnetizing said core in a given direction, a series circuit of said first and second coils being connected in series with said first horizontal deflecting coil so as to form a first series circuit;

(d) a second saturable reactor having fifth and sixth coils connected in series in opposite directions, seventh and eighth coils connected in series in the same direction, a second H-shaped, open magnetic path type core for said fifth through eighth coils, and a permanent magnet for magnetizing said second core in a given direction, a series circuit containing said fifth and fourth coils being connected in series with said second horizontal deflecting coil so as to form a second series circuit, said first and second series circuits being connected in parallel such that a parallel circuit of said first and second series circuits receives a horizontal deflection driving current;

a series circuit including said fifth and sixth coils connected in series with a series circuit including said seventh and eighth coils so as to form a third series circuit which is connected in series with a series circuit including said first and second vertical deflecting coils;

the winding directions of said first through eighth coils and the polarity of said magnets of said first and second saturable reactors being selected such that the impedance of the series circuit of said first and second coils increases and decreases when the impedance of the series circuit of said fifth and sixth coils decreases and increases respectively in accordance with a degree of vertical deflection effected by said vertical deflecting coils.

4,554,489

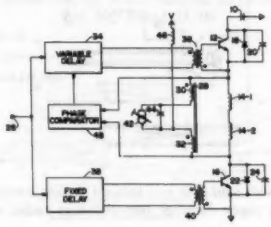
RESONANT MAGNETIC DEFLECTION CIRCUIT

Barry A. McKibben, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 13, 1982, Ser. No. 449,070

Int. Cl.⁴ H01J *29/70*

U.S. Cl. 315—399 **15 Claims**



1. A resonant magnetic deflection circuit comprising:

a deflection coil;

means controlled by a drive signal for developing a first flyback voltage pulse at one end of said deflection coil and a second flyback voltage pulse, having a polarity opposite to said first flyback voltage pulse, at the other end of said deflection coil;

means for variably delaying said drive signal;

means for fixedly delaying said drive signal; and

means for comparing said flyback voltage pulses to provide a compensation signal to said variably delaying means so that the delayed drive signals from said variably and fixedly delaying means are applied to said developing means to cause said flyback voltage pulses occur simultaneously.

4,554,490

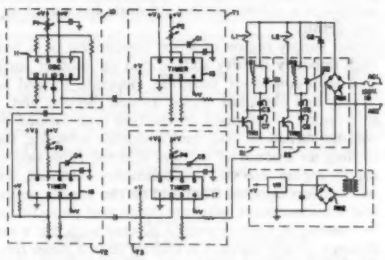
VARIABLE-FREQUENCY DUAL-MOTION FEEDER CONTROL USING A SINGLE PHASE POWER SOURCE

Junius D. Scott, Homer City, Pa., assignor to FMC Corporation, Chicago, Ill.

Filed Oct. 11, 1983, Ser. No. 540,592

Int. Cl.⁴ H02K *33/00*

U.S. Cl. 318—130 **12 Claims**



1. A variable-frequency dual-motion feeder control for use with a single phase power source and a pair of drive coils, said control being adapted to move a variety of materials in either one of two directions, said control comprising:

a variable-frequency oscillator for providing a timing signal having a continuously variable range of frequencies for operating said drive coils at a frequency best adapted to move a given material;

first and second coil drive circuits;

a power supply for connection to said power source for developing power for driving said pair of coils;

means for connecting said first drive circuit between said

power supply and a first of said coils to provide drive pulses to said first coil;

means for connecting said second drive circuit between said power supply and a second of said coils to provide drive pulses to said second coil;

means for connecting said oscillator to said first drive circuit for using said timing signals to control the duration of each of a plurality of drive pulses coupled to said first coil and thereby control the amount of power to said first coil;

phase shifting means connected between said oscillator and said second drive circuit for developing phase-shifted timing signals to control the phase of drive pulses to said second coil relative to drive pulses to said first coil; and

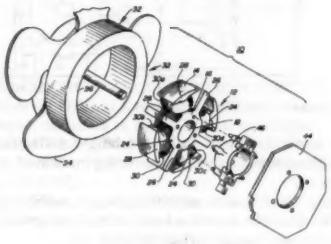
means for controlling the duration of each of a plurality of drive pulses coupled to said second coil and thereby control the amount of power to said second coil.

4,554,491

BRUSHLESS DC MOTOR HAVING A LAMINATED STATOR WITH A SINGLE STATOR WINDING

Larry E. Plunkett, Danville, Ill., assignor to MSL Industries, Inc., Lincolnwood, Ill.

Filed Aug. 10, 1984, Ser. No. 639,331
Int. Cl.[4] H02P *6/02;* **F04B** *35/04;* **F01P** *7/02*
U.S. Cl. 318—254 **14 Claims**



1. A stator for a brushless DC motor having a rotor, said stator being formed of a plurality of stacked stator laminations, with each stator lamination comprising:

a central annular portion defining a central aperture;

a plurality of winding core members extending radially from said central annular portion:

a plurality of intermediate core members extending radially from said central annular portion and positioned intermediate said winding core members;

a single series connected stator winding defining a plurality of winding coil portions extending around each of the winding core members of each stator lamination with the winding coil portions on adjacent winding core members being wound in opposite directions electrically; and

each of said winding core members having a circumferential head portion at its distal end, with the circumferential head portion being eccentric and non-symmetrical about the axis of the respective winding core member.

4,554,492

MOTOR CONTROL SYSTEM

John L. Karpowicz, Crystal Lake, and Randall A. Zielsdorf, Mundelein, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

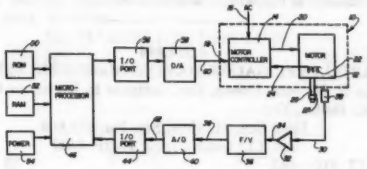
Continuation of Ser. No. 561,685, Dec. 15, 1983, abandoned. This application Jan. 4, 1985, Ser. No. 688,283
Int. Cl.[4] G05B *5/00*
U.S. Cl. 318—309 **7 Claims**

1. An improved system for controlling the speed of a motor having a motor winding and a shaft, said system including, a motor control circuit for providing a command voltage to the winding of the motor and first means for sensing a motor speed parameter and for providing a feedback signal to the motor control circuit, the improvement comprising:

second means for sensing the actual speed of the motor shaft to generate data representative of said actual speed;

calculating means for receiving said data representative of said actual speed and for periodically calculating an input command based on said data representative of said actual speed;

said calculating means being operable at selected times to



calculate an input command that is equal to A−(B−C)/K, where A is an input command calculated by said calculating means during an immediately preceeding period, B is data representative of the actual speed of the motor, C is a desired motor speed data and K is a selected constant; and

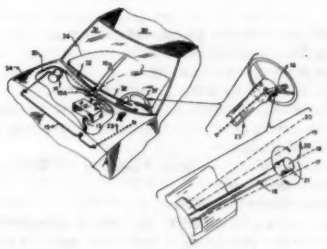
means for transmitting said input command to said motor control circuit input, whereby said command voltage from said motor control circuit is adjusted in response to variations in said input command.

4,554,493

AUTOMATED WINDSHIELD WIPER SYSTEM

Howard L. Armstrong, 2730 Hollydale Dr., Homewood, Ill. 60430

Filed Feb. 29, 1984, Ser. No. 584,716
Int. Cl.[4] H02P *1/04*
U.S. Cl. 318—444 **4 Claims**



1. An apparatus for automated control of windshield wipers in response to moisture accumulation at the exterior surface of a windshield, said apparatus comprising:

a. a pair of thin wires embedded within an interior portion between opposing exterior surfaces of the windshield and below a surface area which is subject to the cleaning action of the windshield wipers, said wires being spaced apart to a separation distance predetermined to establish a capacitance value within a range wherein the occurrance of moisture on the windshield surface between the wires yields a readily detectable capacitance increase;

b. detection circuitry coupled to one end of each of the respective wires and operable to detect and register the resultant increase in capacitance upon accumulation of moisture at the exterior windshield area between the separated wires;

c. drive means coupled to the windshield wipers for recipro-

cating the wipers over the surface area of the windshield to be cleared of moisture;

d. activating circuitry coupled between the detecting circuity and drive means for activating the drive means into operation, said activating circuitry being responsive to the detected increase in capacitance between the thin wires; and

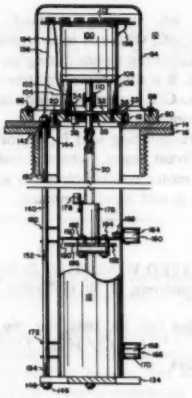
e. means for momentarily disabling the activating circuitry after a predetermined number of reciprocations of the wipers to provide for a new measurement of moisture content at the windshield surface.

4,554,494

FLUID LEVEL GAUGE HAVING MAGNETIC SENSOR

James R. Howeth, Euless, Tex., assignor to Rochester Gauges, Inc., Dallas, Tex.

Filed Sep. 21, 1984, Ser. No. 653,869
Int. Cl.[4] G01F *23/12*; H02P *8/00*
U.S. Cl. 318—482 **29 Claims**



1. A fluid measurement gauge, comprising:

a housing for extending into a fluid,

a leadscrew within said housing,

means for rotationally driving said leadscrew,

means threadably engaged to said leadscrew for longitudinally traversing along said leadscrew in response to rotation of said leadscrew,

a float positioned exterior to said housing for floating at the surface of said fluid,

a magnet mounted to said float, and

a magnetic sensor mounted to said means engaged to said leadscrew for producing a detection signal when said sensor is in the vicinity of said magnet for detecting the level of said fluid.

29. A fluid measurement gauge, comprising:

an elongate, fluid-tight cylindrical housing for extending vertically into a body of fluid,

a leadscrew mounted coaxially within said housing and supported by upper and lower bearings,

a stepper motor connected to rotationally drive said leadscrew,

a nut threadedly engaged to said leadscrew for longitudinally traversing said leadscrew when said leadscrew is rotated relative to said nut,

first and second guide rods within said housing parallel to said leadscrew and positioned to prevent rotation of said nut, at least one of said guide rods electrically insulated from said housing, said guide rods serving as electrical conduction paths,

a float encircling said housing and floating at the surface of said fluid,

a magnet mounted to said float,

a Hall-effect magnetic sensor mounted on said nut for generating a detection signal when said magnet is in the vicinity of said sensor for detecting the level of said fluid,

brushes connected to said magnetic sensor and touching said guide rods for transmitting said detection signal from said sensor to said guide rods, and

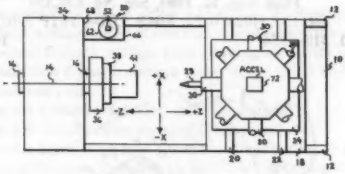
an optical sensor for generating a reference position signal when said magnetic sensor reaches a predetermined reference position wherein said fluid level is measured as the distance from said reference position to a position of said magnetic sensor where said detection signal is generated.

4,554,495

DATUM REFERENCE FOR TOOL TOUCH PROBE SYSTEM

Richard K. Davis, Charlottesville, Va., assignor to Ormand R. Austin, Charlottesville, Va.

Filed Aug. 29, 1984, Ser. No. 645,280
Int. Cl.[4] G05B *19/24*
U.S. Cl. 318—572 **20 Claims**



1. A method of tool touch probing for determining the desired dimension on a workpiece being machined, comprising the steps of:

locating fixed datum surface means a calibrated distance away from the rotational axis of the workpiece;

vibrating said datum surface means;

bringing a machine tool, which may be comprised of a cutting tool, mounted on a machining system into contact with said datum surface means and sensing vibrations emanating therefrom;

determining the position of the surface of said tool when said datum surface means is touched;

bringing said tool into predetermined contact with said workpiece and sensing said workpiece contact;

determining the position of said tool surface when said workpiece is touched; and

differencing the two positions of contact and determining therefrom the desired dimension.

4,554,496

CONTROLLABLE ROTARY ACTUATOR

George Rudich, Jr.; Charles F. Beeson, both of Goshen; Gary L. Bartley, Elkhart, and Terry A. Heckenbach, Middlebury, all of Ind., assignors to Johnson Service Company, Milwaukee, Wis.

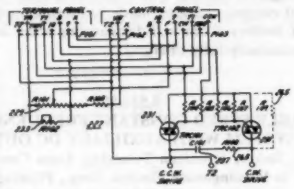
Filed Feb. 25, 1983, Ser. No. 469,928
Int. Cl.[4] G05B *19/26*
U.S. Cl. 318—600 **6 Claims**

1. A motor-driven rotary actuator including:

an AC electric drive motor configured for providing one of a plurality of output torques, said motor being capable of providing substantially the same output torque for either direction of motor rotation;

power transmission means having a predetermined unchangeable gearing ratio and including a rotatable output shaft, said transmission means being coupled to said drive motor and including drive elements formed of disparate materials selected for transmitting one of said output torques;

electric control means coupled to said motor for providing rotation positioning control of said output shaft in response to addressably coded digital command signals and including means for generating a feedback signal representative of the actual angular position of said output shaft, means for selecting an address signal to which said control means will be responsive and means for generating an



error signal representative of the difference between the actual position and a desired position of said output shaft; said electric control means further including interface means for attenuating spurious electrical noise and converter means coacting with microcomputer means for providing a clocked pulse signal representative of the position of said output shaft.

4,554,497
ACCELERATION/DECELERATION CIRCUIT

Ryoichiro Nozawa; Hideaki Kawamura, and Takao Sasaki, all of Tokyo, Japan, assignors to Fanuc Ltd., Hino, Japan

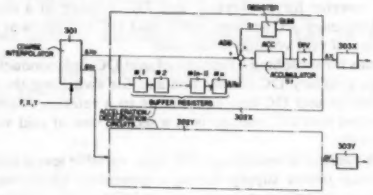
PCT No. PCT/JP83/00326, § 371 Date May 14, 1984, § 102(e) Date May 14, 1984, PCT Pub. No. WO84/01444, PCT Pub. Date Apr. 12, 1984

PCT Filed Sep. 30, 1983, Ser. No. 610,983

Claims priority, application Japan, Oct. 1, 1982, 57-172863

Int. Cl.[4] G05B *21/02*

U.S. Cl. 318—636 **10 Claims**



1. An acceleration/deceleration circuit for raising or lowering a feed velocity of movable machine element having an axis of movement to achieve a commanded velocity, comprising:

means for computing a traveling distance of the element along the axis for every sampling period (T);

first storage means for storing n samples of the traveling distances where $n=\tau/T$, and τ is a time constant;

arithmetic means for performing an operation:

$$\Delta Xn-\Delta Xo+St\rightarrow St$$

where ΔXn represents the most recently computed traveling distance, ΔXo represents the oldest computed traveling distance component among the traveling distances stored in said first storage means, and St represents the result of the operation, and for dividing the result St of the operation by n;

second storage means for storing the result St; and

means for providing St/n as an output corresponding to a traveling distance at a present sampling period.

4,554,498
CONTROL APPARATUS FOR RUNNING MOVING OBJECT

Kunio Fujiwara; Hisashi Katoo; Fumihide Satoo, and Hirokazu Taki, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

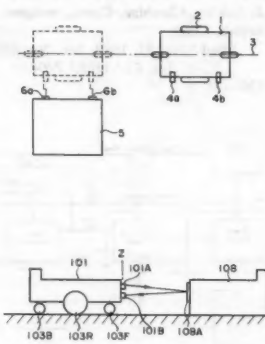
PCT No. PCT/JP82/00073, § 371 Date Oct. 20, 1982, § 102(e) Date Oct. 20, 1982, PCT Pub. No. WO82/03283, PCT Pub. Date Sep. 30, 1982

PCT Filed Mar. 16, 1982, Ser. No. 438,850

Claims priority, application Japan, Mar. 16, 1981, 56-38316; Jun. 11, 1981, 56-91396

Int. Cl.[4] G05B *1/06*; B64C *13/18*

U.S. Cl. 318—640 **13 Claims**



1. A running control apparatus for a moving vehicle, comprising a pair of photoelectric sensors on the vehicle, each sensor including a light emitting element and a light receiving element, a pair of reflectors at a predetermined target position opposing said photoelectric sensors, first means for stopping the moving vehicle when the light receiving elements of said pair of sensors each substantially simultaneously receives light reflected by a corresponding one of said reflectors of the target, and means for fixed point turning said moving vehicle near said target position until said moving vehicle assumes an attitude whereat at least one of said sensors receives a maximum amount of light reflected from said reflectors.

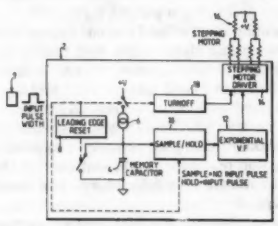
4,554,499
COMPUTER CONTROLLED MOTOR

Leonard H. Sherman, Sunnyvale; James R. Swartz, San Mateo, and James M. Williams, Palo Alto, all of Calif., assignors to Genentech, Inc., So. San Francisco, Calif.

Continuation of Ser. No. 491,115, May 3, 1983, abandoned. This application Oct. 24, 1984, Ser. No. 664,110

Int. Cl.[4] H02P *8/00*

U.S. Cl. 318—696 **14 Claims**



1. Apparatus for driving a motor at a desired motor speed, said apparatus comprising:

means for generating a command signal having a preselected pulse width which varies logarithmically with said desired motor speed;

means connected to receive said command signal for generating a control signal which has a preselected control component exponentially related to said command component of said command signal;

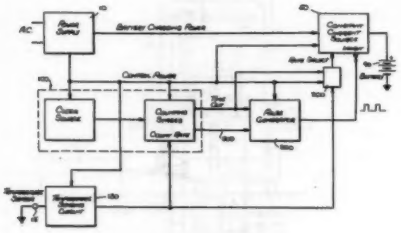
means connected to receive said control signal and for translating the control signal into said desired motor speed, which speed is directly proportional to said control component of said control signal.

4,554,500

BATTERY CHARGING APPARATUS AND METHOD

Thomas J. Sokira, Cheshire, Conn., assignor to Anton/Bauer, Inc., Shelton, Conn.

Filed Mar. 31, 1983, Ser. No. 480,746
Int. Cl.[4] H02J *7/04*
U.S. Cl. 320—31 **25 Claims**



1. A battery charger comprising:

controlled current source means which can be coupled to a battery to be charged for sourcing current to said battery and having an inhibiting input for inhibiting the sourcing of current;

counting means for generating a timing signal which changes from a first state to a second state after a time interval

means for generating a two-state signal responsive to the temperature of said battery being charged, said signal being in a first state when said battery is below a threshold temperature and being in a second state when said battery is above said threshold temperature, said current source means having a further input for determining, from two different constant current levels, the current sourced by said current source means to said battery, said further input responsive to said two-state signal so as to charge said battery at a first constant current rate when said two-state signal is in said first state and to charge said battery at a second, reduced constant current rate when said two-state signal is in said second state, said battery being substantially fully charged at one of the first, second or combination of the first and second current rates when said timing signal is in said first state; and

means for generating a pulsing signal;

said inhibiting input of said current source means responsive to said pulsing signal when said timing signal is in said second state, said current source means delivering a pulsed current to said battery when said timing signal is in said second state so as to keep said battery from self-discharging after said battery is substantially fully charged.

4. A method for charging a battery, comprising the steps of:

charging said battery in a constant current charging mode, so as to substantially fully charge said battery, including the steps of:

charging said battery at a first constant current rate;

generating a timing signal which changes state after a predetermined time interval;

generating a signal responsive to the temperature of said battery if the temperature of said battery exceeds a predetermined temperature;

said step of charging at a first constant current rate continuing for said predetermined time interval or until said signal responsive to the temperature is generated, said battery being thereafter charged, if said signal responsive to the temperature is generated, at a reduced constant current rate for a second time interval; and

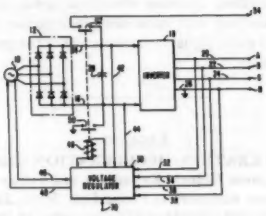
charging said battery with a pulsed current after said constant current charging mode has terminated so as to keep said battery from self-discharging after said battery is substantially fully charged.

4,554,501

VARIABLE SPEED CONSTANT FREQUENCY POWER SYSTEM WITH AUXILIARY DC OUTPUT

Donal E. Baker, American Township, Lima County, Ohio, assignor to Westinghouse Electric Corp., Pittsbugh, Pa.

Filed Apr. 27, 1984, Ser. No. 604,690
Int. Cl.[4] H02P *9/42, 9/48*
U.S. Cl. 322—29 **11 Claims**



1. A DC-link, variable speed constant frequency power supply, having an auxiliary DC output, comprising:

an electrical generator for producing a DC voltage on a pair of DC-link conductors;

means for regulating said DC voltage at alternative voltage levels by controlling the output of said generator;

an inverter for converting said DC voltage to a constant frequency AC voltage, when said DC voltage is at a first one of said voltage levels; and

means for switching a first one of said DC-link conductors to an auxiliary DC output line and for switching the other one of said DC-link conductors to a reference terminal, when said DC voltage is at a second one of said voltage levels.

8. A method of operating a DC-link, variable speed constant frequency power supply having a generator which supplies DC power to an inverter via a pair of DC link conductors, said method comprising the steps of:

controlling the generator output voltage to produce a first DC voltage between said DC-link conductors in the absence of an auxiliary output command signal;

controlling the generator output voltage to produce a second DC voltage between said DC-link conductors in response to an auxiliary output command signal; and

switching one of said DC-link conductors to an auxiliary output terminal while switching the other DC-link conductor to a reference terminal in response to said auxiliary output command signal.

4,554,502

POWER FACTOR CORRECTION SYSTEM

Frederick Rohatyn, 166-10 15th Dr., Beechhurst, N.Y. 11357

Filed May 6, 1983, Ser. No. 480,496
Int. Cl.[4] G05F *1/24*
U.S. Cl. 323—208 **20 Claims**

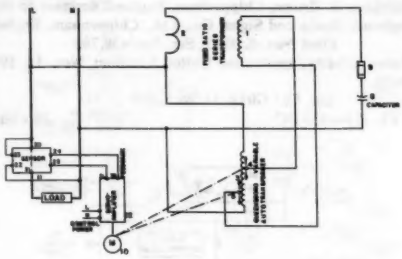
1. A power-factor correction system for reactive power control and concomitant power factor correction adapted to

cooperate with a line supplying power at a given line voltage from power generating means to an inductive load via a given path, comprising in combination,

reactive power compensation means in shunt with said line supplying power, and adapted to be connected in shunt with said inductive load, and including

fixed capacitance means, and

voltage applying means delivering a voltage of continuously variable magnitude in a stepless manner to said fixed capacitance means in response to any change in



lagging reactive power consumed by said load so as to correct the magnitude of the power factor in said line supplying power to said inductive load to a predetermined correction value as a result of said power compensation means generating thereacross a compensatory reactive power in proportion to the square of said voltage of variable magnitude delivered to said fixed capacitance means so as to at least partly off-set said lagging reactive power, whereby power factor correction is optimized, yet not producing any transient.

4,554,503

CURRENT STABILIZING CIRCUIT ARRANGEMENT

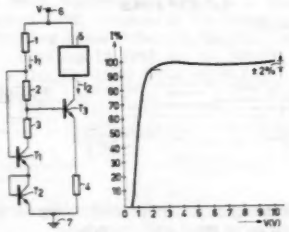
Wolfdietrich G. Kasperkovitz, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 27, 1984, Ser. No. 574,774

Claims priority, application Netherlands, Feb. 10, 1983, 8300499

Int. Cl.⁴ G05F *3/20;* **H03K** *17/00*

U.S. Cl. 323—315 **2 Claims**



1. A current stabilizing arrangement comprising a first circuit between a first and a second power supply terminal which comprises a series arrangement of a first resistor, a second resistor and the collector-emitter path of a first transistor whose base is connected to a point between the first and the second resistor, and a second circuit between a third terminal and the second power supply terminal which comprises the collector-emitter path of a second transistor whose base is coupled to the collector of the first transistor, characterized in that in the first circuit, in series with the first and the second resistor, a third resistor is provided between the connection point of the base of the second transistor and the collector of the first transistor.

4,554,504

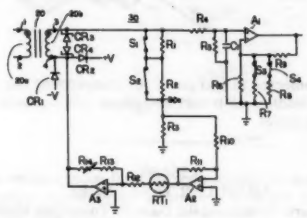
NEGATIVE RESISTANCE COMPENSATED TRANSFORMER

Philip L. Dillon, Arlington, Tex., assignor to Reliance Electric Company, Cleveland, Ohio

Filed Apr. 30, 1984, Ser. No. 605,646

Int. Cl.⁴ H01F *15/18*

U.S. Cl. 323—356 **11 Claims**



1. A compensated circuit for use in interfacing a transmission device to a cable facility comprising:

(a) transformer means having first and second windings, said first winding being connected to said cable facility and said second winding having first and second terminals; and

(b) impedance generating means connected between said second winding and said transmission device comprising:

(i) first selectable switch means for selecting one of a predetermined number of resistances each of said resistances being associated with a selected one of a predetermined number of selectable impedances; and

(ii) negative resistance generating means having an input and an output, said first selectable means being connected between said first terminal and said input, said output being connected to said second terminal to thereby form a loop, said negative resistance generating means being responsive to the current flowing in said loop for presenting a negative resistance at said second terminal such that said circuit provides to said cable facility said selected one of said predetermined number of selectable impedances.

4,554,505

TEST SOCKET FOR A LEADLESS CHIP CARRIER

Clyde L. Zachry, Camarillo, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 10, 1983, Ser. No. 503,002

Int. Cl.⁴ G01R *31/02;* **H01R** *39/00*

U.S. Cl. 324—158 F **6 Claims**

1. A test socket for a high frequency leadless chip carrier, comprising:

a base;

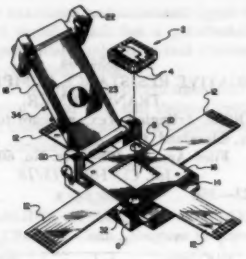
a cover coupled to and spaced from said base;

a frame coupled to said base, said frame having an opening to receive and position the chip carrier;

a planar assembly of coaxial cables having contacts at one end, said planar assembly being coupled to said frame;

a resilient pad supported by said base within said opening and positioned under said coaxial cable contacts in line with the corresponding contacts of the chip carrier so that said coaxial cable contacts can be compressed against the

corresponding contacts of the chip carrier in a planar manner; and



means connected to said cover for compressing the contacts of the leadless chip carrier against said contacts of said coaxial cables.

4,554,506

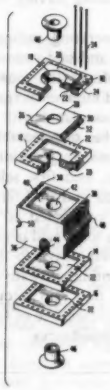
MODULAR TEST PROBE

Louis H. Faure, Poughkeepsie; Dana R. Townsend, Fishkill, and Thomas J. Walsh, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 278,950, Jun. 30, 1981, abandoned. This application Dec. 10, 1984, Ser. No. 680,232

Int. Cl.[4] G01R *1/06*

U.S. Cl. 324—158 P **9 Claims**



1. A probe assembly for clustering deflectable beam elements in an array corresponding to an array of surface terminals of an integrated circuit to be tested comprising:

a plurality of straight deflectable beam elements;

first guide means having an aperture and a plurality of through-holes around said aperture for receiving said beam elements to space and align them in a predetermined orientation,

second guide means having an aperture and a plurality of through-holes around said aperture for receiving beam elements to space and align them in a predetermined orientation,

a center post having said first and second guide means mounted on opposite ends thereof and establishing a predetermined separation distance therebetween, said beam elements positioned by said first and second guide means and around said center post, and

fastener means positioned in said apertures uniting said center post and said first and second guide means in a single assembly, wherein said first guide means causes said beams elements to prebow in said predetermined orientation and to buckle under an applied load in various degrees but in the same direction without contacting each other when beams ends contact the surface of the integrated circuit under test to establish a uniform predetermined beam contact force.

4,554,507

ARRANGEMENT FOR TESTING THE OPERABILITY OF A SEMICONDUCTIVE DEVICE

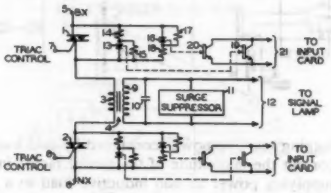
Christopher R. Brown, Chippenham, England, assignor to Westinghouse Brake and Signal Co., Ltd., Chippenham, England

Filed Nov. 8, 1982, Ser. No. 439,702

Claims priority, application United Kingdom, Nov. 14, 1981, 8134401

Int. Cl.[4] G01R *31/26*; G08B *21/00*

U.S. Cl. 324—158 SC **20 Claims**



1. Apparatus for testing the operability of a semiconductive device comprising, means for injecting test pulses into a normal control signal to induce a momentary change of the operating state of said semiconductive device, sensing means connected in parallel with said semiconductive device sensitive to the induced change to produce a binary output sequence indicating the induced change, and correlation means operative to correlate the test pulses with the sensed response which is arranged to carry out a predetermined action in event that said correlation means determines a state of inoperability of said semiconductive device.

4,554,508

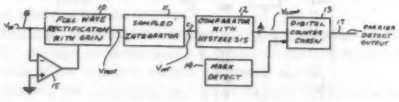
CARRIER DETECTION CIRCUIT

Yusuf A. Haque, San Jose, Calif., assignor to American Microsystems, Incorporated, Santa Clara, Calif.

Filed Dec. 7, 1983, Ser. No. 559,157

Int. Cl.[4] H04B *17/00*

U.S. Cl. 329—101 **12 Claims**



1. A carrier detection circuit for determining the presence of a carrier signal on an input lead comprising:

means for rectifying the signal on said input lead and providing a rectified signal;

integration means for integrating said rectified signal and providing an integrated signal;

a comparator for comparing said integrated signal with a reference signal, said comparator producing a comparator output signal whenever the amplitude of said integrated signal equals or exceeds the amplitude of said reference signal; and

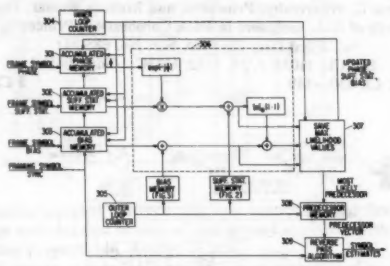
timing means for receiving of said comparator output signal and determining the length of time that a comparator output signal has been received and for providing an

output signal indicating when a carrier signal has been detected for a time greater than a selected length of time.

4,554,509
FREQUENCY SHIFT KEYED DEMODULATION SYSTEM

Frank N. Cornett, State College, Pa., assignor to HRB-Singer, Inc., State College, Pa.

Filed Aug. 27, 1984, Ser. No. 644,296
Int. Cl.[4] H04L 27/14
U.S. Cl. 329—105 2 Claims



1. A method for demodulating a sequence of continuous phase frequency shift keyed signals into a sequence of symbols, comprising the steps of:

(a) choosing the most likely predecessor symbol for each of the available symbols at each symbol time from the frequency shift keyed signals;

(b) storing all such chosen predecessor symbols;

(c) determining whether there is a singular predecessor symbol;

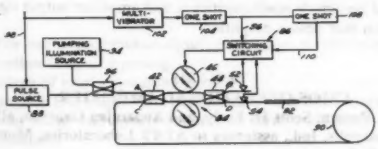
(d) When a singular predecessor symbol is encountered, choosing from the stored predecessor symbols a unique sequence of predecessor symbols from that singular predecessor symbol back to the next most recent previously encountered singular predecessor symbol; and

(e) outputting the unique sequence of symbols.

4,554,510
SWITCHING FIBER OPTIC AMPLIFIER

Herbert J. Shaw, Stanford, and Michel J. F. Digonnet, Palo Alto, both of Calif., assignors to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed Sep. 12, 1983, Ser. No. 531,231
Int. Cl.[4] H01S 3/094; H03F 3/68
U.S. Cl. 330—4.3 18 Claims



1. An amplifier for fiber optic systems, comprising:

a crystal fiber formed of material which is capable of lasing;

a source of pumping illumination for inverting said material;

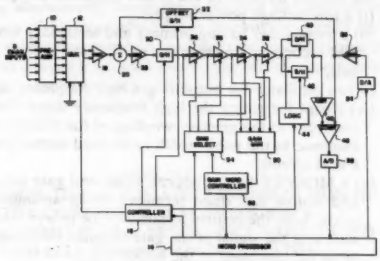
a source of signals to be amplified; and

switching means coupled to said source of pumping illumination, said source of signals to be amplified, and one end of said crystal fiber for alternatively coupling said pumping illumination or said signals to be amplified to said one end of said crystal fiber.

4,554,511
OFFSET VOLTAGE CORRECTION NETWORK FOR INSTANTANEOUS FLOATING POINT AMPLIFIER

Steve W. Braun, San Diego, Calif., assignor to Tetra Tech, Inc., Pasadena, Calif.

Filed Sep. 29, 1982, Ser. No. 427,489
Int. Cl.[4] H03F 1/02, 3/217, 3/45; H03G 3/20
U.S. Cl. 330—9 26 Claims



1. An instantaneous floating point amplifier, comprising

an analog signal input summation network for receiving analog data signals,

synchronized means for storing a predetermined value of offset voltage said synchronized means coupled to said analog signal input summation network for effectively subtracting an offset voltage component from said analog data signals,

a sample-and-hold network coupled to receive an output signal from said summation network,

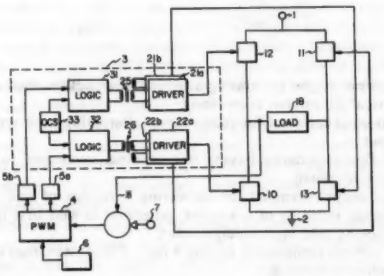
cascaded amplifier means coupled to said sample-and-hold network for developing an analog mantissa value for said sampled-and-held data and a digital gain word related thereto, and

an analog-to-digital converter coupled to said cascaded amplifier means for converting said analog mantissa value to a digital mantissa value, which, with said digital gain word, represents in digital form said sample analog data.

4,554,512
SWITCHING AMPLIFIER WITH MOSFET DRIVER CIRCUIT

Michael E. Aiello, Monroeville, Pa., assignor to Aerotech, Inc., Pittsburgh, Pa.

Filed Aug. 27, 1984, Ser. No. 644,775
Int. Cl.[4] H03F 3/38
U.S. Cl. 330—10 44 Claims



1. A switching amplifier comprising:

(a) an input terminal for being connected to a d.c. power supply;

(b) an output terminal for being connected to a load;

(c) at least one bipolar power transistor, said transistor hav-

ing collector, emitter and control terminals, said transistor having its collector-emitter circuit in series with the input and output terminals such that the signal at the control terminal establishes an on or off condition of the bipolar power transistor;

(d) a PWM circuit outputting a pulse width modulated signal;

(e) an isolating driver circuit between the PWM circuit and the control terminal of the power transistor comprising:

(i) a low voltage power supply;

(ii) a transformer having primary and secondary windings said secondary winding having first and second terminals;

(iii) an oscillator for outputting a high frequency signal;

(iv) means for gating the high frequency signal from the oscillator to the primary winding of the transformer in response to the pulse width modulated signal from the PWM circuit;

(v) a MOSFET having source, drain and gate terminals, said source and drain terminals being arranged in a circuit with the control terminal of the power transistor such that the signal at the gate terminal establishes the on or off condition of the MOSFET;

(vi) means for rectifying the voltage in the secondary winding of the transformer and for applying the rectified voltage at the first winding terminal to the gate terminal of the MOSFET;

(vii) switching means for rapidly discharging the gate terminal of the MOSFET when the high frequency signal is no longer gated to the primary winding of the transformer;

whereby the on or off condition of the MOSFET and therefore its ability to control the on or off condition of the bipolar power transistor is substantially entirely independent of the voltage at the input terminal connected to the d.c. power supply.

4,554,513

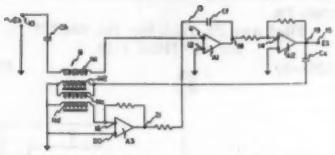
REPLICA CIRCUIT

Eddy So, Gloucester, Canada, assignor to Canadian Patents and Development Limited-Société Canadienne des Brevets et D'Exploitation Limteé , Ottawa, Canada

Filed Oct. 17, 1984, Ser. No. 661,610

Int. Cl.[4] H03F *1/34*

U.S. Cl. 330—85 **14 Claims**



1. A circuit for generating a replica of an active alternating electrical parameter, comprising

(a) an input terminal for receiving an alternating high voltage input;

(b) a first impedance having one terminal connected to said input terminal;

(c) an output terminal for delivering a replica of said high voltage input or of a current generated in said first impedance by said high voltage input;

(d) a current comparator having a pair of input windings and a detection winding;

(e) a main amplifier having a ground input, an active input, an output and a feedback loop between its output and active input including a second impedance, said active input being connected to the other terminal of the first impedance through a first one of said input windings;

(f) a third impedance having one terminal connected to said output terminal and to receive the output of the main amplifier and its other terminal connected to ground through the second input winding; and

(g) a feedback amplifier having a ground input, an active input and an output, such active input of the feedback amplifier being connected to ground through the detection winding, and the output of the feedback amplifier being connected to modify the current in one of said input windings to return the current in said detection winding to zero.

4,554,514

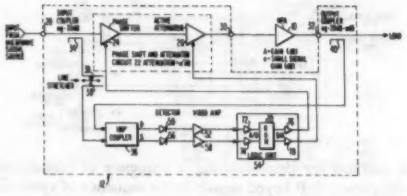
PREDISTORTION CIRCUIT WITH FEEDBACK

James C. Whartenby, Princeton, and Mahesh Kumar, Dayton, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 21, 1984, Ser. No. 685,241

Int. Cl.[4] H03F *1/26, 1/32;* **H03C** *1/06;* **H04B** *1/12*

U.S. Cl. 330—149 **8 Claims**



1. A predistortion circuit, for a power amplifier exhibiting phase and amplitude nonlinearities at its output as a function of input power, comprises in combination:

an input terminal coupled to receive a signal to be amplified and an output terminal coupled to the input of said power amplifier;

means coupled to said input terminal for producing a first signal which is a predetermined fraction X of the signal to be amplified;

means coupled to the output of said power amplifier for producing a second signal which is said fraction X of the output power of said amplifier reduced by a value equal to the gain of said amplifier at a small value of input signal,

means responsive to said first and second signals for producing a third signal which is substantially proportional to the phase difference between said first and second signals and producing a fourth signal which is substantially proportional to the sum of the first and second signals; and

means coupled between said input terminal and said output terminal and responsive to said third and fourth signals applied thereto for changing the phase and amplitude of the signal passing therethrough to compensate for nonlinearities of said power amplifier such as to reduce the phase and amplitude nonlinearities in said amplifier output signal from said power amplifier.

4,554,515

CMOS OPERATIONAL AMPLIFIER

Kyle L. Burson; Scott H. Early, and Apparajan Ganesan, all of Indianapolis, Ind., assignors to AT&T Laboratories, Murray Hill, N.J.

Filed Jul. 6, 1984, Ser. No. 628,582

Int. Cl.[4] H03F *3/45*

U.S. Cl. 330—261 **12 Claims**

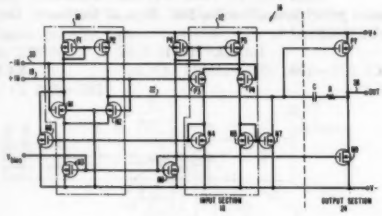
1. An operational amplifier comprising:

first and a second power supply voltage nodes;

a first differential input stage connected between said supply voltage nodes and including first and second input current branches with one end connected to said first supply voltage node and the other end connected to one side of a first current source, the other side of said first current

source being connected to said second supply voltage node;

a second differential input stage connected between said supply voltage nodes, in parallel with said first stage, and including first and second input current branches with one end connected to said second supply voltage node and the other end connected to one side of a second current source, the other side of said second current source being connected to said first supply voltage node;



first means coupled between said first branch of said first stage and said first branch of said second stage for establishing proportional currents in them;

second means coupled between said second branch of said first stage and said second branch of said second stage for establishing proportional currents in them, and

an output stage having an input node coupled to said second branch of said first stage.

4,554,516

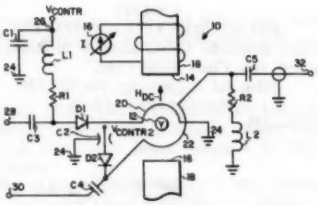
FREQUENCY SOURCE HAVING YIG ABSORPTION/TRANSMISSION FILTER

Ganesh R. Basawapatna, Santa Rosa, Calif., assignor to Microsource, Inc., Santa Rosa, Calif.

Continuation of Ser. No. 371,381, Apr. 23, 1982, abandoned. This application Nov. 29, 1984, Ser. No. 676,043

Int. Cl.[4] **H03B** *1/00, 1/04, 19/14, 23/00*

U.S. Cl. 331—76 **7 Claims**



1. For use in microwave signal generation, a transmission-/absorption filter comprising:

a sphere of monocrystalline garnet;

a turnable DC magnet for producing a controlled magnetic field about said sphere thereby to form a magnetic field structure;

a first coupling loop disposed transverse of the magnetic field about said sphere;

a second coupling loop disposed transverse of said magnetic field about said sphere and orthogonal to said first coupling loop;

said first coupling loop having a first output coupled to a DC ground and a first input coupled to receive a first microwave signal at a first input port;

said second coupling loop having a second output coupled to an output port and a second input coupled to receive a second microwave signal at a second input port;

first means for blocking and unblocking said first microwave signal applied to said first coupling loop; and

second means for blocking and unblocking said second microwave signal applied to said second coupling loop; wherein

said sphere is operative to resonate under control of said DC magnet to either pass a selected fundamental frequency or alternately to reject said fundamental frequency for providing alternatively transmission filtering and absorption filtering of harmonically related microwave signals applied to said first coupling loop and said second coupling loop to convey a selected microwave signal respectively to said output port.

4,554,517

DEVICE FOR THE AUTOMATIC LINEARIZATION OF THE CONTROL SIGNAL-FREQUENCY CHARACTERISTIC OF A FREQUENCY-MODULATED VARIABLE FREQUENCY OSCILLATOR

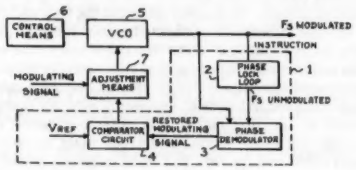
Alain Parniére, Rueil Malmaison, and Dominique Bazenant, Paris, both of France, assignors to Thomson-CSF, Paris, France

Filed Dec. 13, 1983, Ser. No. 560,975

Claims priority, application France, Dec. 14, 1982, 82 20967

Int. Cl.[4] **H03C** *3/08, 3/09*

U.S. Cl. 332—18 **5 Claims**



1. A device for the automatic linearization of the control signal-frequency characteristic of a frequency-modulated variable frequency oscillator in which the operating frequency of the oscillator is obtained on the basis of a first control signal applied to the control input of the oscillator and the modulation frequency is obtained on the basis of a modulating signal whose amplitude is adjusted, by adjustment means, as a function of the modulation index of the desired frequency-modulated signal, the modulating signal being added to said first control signal in order to obtain said frequency-modulated signal at the output of said oscillator, comprising:

a phase lock loop having an output and an instruction input to which is applied a signal corresponding to said frequency-modulated signal, and a pass band which is regulated in order to obtain at said output a frequency-filtered signal corresponding to said frequency-modulated signal applied to said instruction input;

a phase demodulator coupled by first and second inputs respectively to said instruction input and to said output of said phase lock loop in order to produce a signal corresponding to the modulation index of said frequency-modulated signal; and

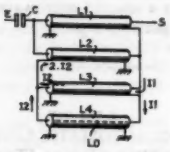
a comparator circuit having an output and coupled by a first input to said phase demodulator, and having a second input to which is applied a reference signal corresponding to a desired modulation index, in order to obtain at said comparator output a second control signal which is provided to said adjustment means for adjusting the amplitude of said modulating signal so as to permanently adjust the modulation index of said frequency-modulated signal to the value of the desired modulation index.

4,554,518

WIDE BAND IMPEDANCE TRANSFORMER WITH TRANSFORMATION RATIO CLOSE TO THREE FOR RADIO FREQUENCIES

Jean-Michel Baer, Franconville, France, assignor to Thomson CSF, Paris, France

Filed Jun. 13, 1984, Ser. No. 620,259
Claims priority, application France, Jun. 17, 1983, 83 10064
Int. Cl.⁴ H01P 5/02
U.S. Cl. 333—33 **5 Claims**



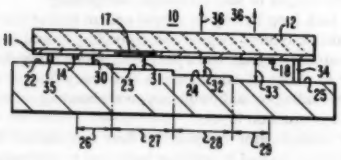
1. A wide band impedance transformer for radio frequencies of the coaxial type, having a transformation ratio close to 3, which comprises an input terminal, an output terminal, a conducting connection and a first, a second and a third coaxial cable, each having an inner conductor with a first and a second end and an outer conductor with a first and a second end and wherein the first cable has the first and the second ends of its inner conductor coupled respectively to the input terminal and to the output terminal and the first end of its outer conductor connected to ground, the second cable has the first and second ends of its inner conductor connected respectively to the first end of the inner conductor of the first cable and to the second end of the outer conductor of the first cable and the second end of its outer conductor connected to ground, the third cable has the first and the second ends of its inner conductor connected respectively to the first end of the outer conductor of the second cable and to the second end of the inner conductor of the second cable and the first end of its outer conductor connected to ground, and the connection connects together the first end of the inner conductor of the third cable and the second end of the outer conductor of the third cable.

4,554,519

MAGNETOSTATIC WAVE DELAY LINE

John D. Adam, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 17, 1983, Ser. No. 542,840
Int. Cl.⁴ H03H 9/30
U.S. Cl. 333—141 **24 Claims**



1. A magnetostatic wave device operable within a biasing magnetic field for delaying microwave signals wherein the delay varies by a predetermined amount with frequency comprising:

a body of yttrium iron garnet for propagating magnetostatic waves having a thickness in the range of 5 to 50 micrometers,

first and second transducers located in spaced apart relationship for generating and receiving magnetostatic waves along a path in said body of yttrium iron garnet,

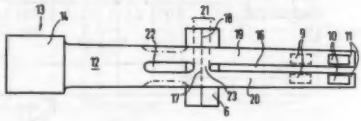
a plurality of ground planes coupled together, said ground planes formed from a common metal block having a layer of plated gold, each ground plane having a predetermined length along said path in said material and spaced by a predetermined distance from said material.

4,554,520

ELECTROMAGNETIC MINIATURE RELAY

Werner Minks, Heroldsberg-Kleingeschaidt, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 13, 1983, Ser. No. 541,524
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1982, 3238223
Int. Cl.⁴ H01H 9/02
U.S. Cl. 335—106 **5 Claims**



1. Electromagnetic miniature compact relay comprising: a contact spring firmly clamped at one end; and

said contact spring having a bifurcated end including a pair of legs separated by a longitudinal slot;

each of said legs carrying one upper contact body and one lower contact body symmetrically opposing identical bodies mounted on another leg;

said contact spring including a cross-sectionally weakened area abutting a web spanning a hiatus between said slot and said weakened area;

an armature actuator extending across an entire width of said contact spring;

a line of contact between said contact spring and said actuator being disposed between said weakened area and closed end of said slot;

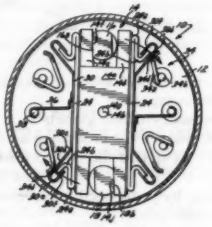
said legs being capable of moving independently of each other and said bifurcated end being twistable within said weakened area.

4,554,521

ARMATURE/CONTACT SYSTEM

Max Hurter, Riverside, Calif., assignor to Babcock Electro-Mechanical, Inc., Costa Mesa, Calif.

Filed Jul. 3, 1984, Ser. No. 627,436
Int. Cl.⁴ H01H 67/06
U.S. Cl. 335—125 **12 Claims**



1. An armature/contact system for controlling the continuity of an electrical circuit, comprising in combination,

a pivotal armature adapted to move about a given axis,

a resilient (moveable) contactor carried by such armature (and) having a contactor surface and an axis of flexure relative to said armature which are within a plane which includes said pivotal axis for said armature,

and a stationary contact positioned relative to said armature and having an arcuate surface to be engaged by said contactor at said contactor surface upon pivotal movement of said armature.

4,554,522

ELECTROMAGNETIC RELAY

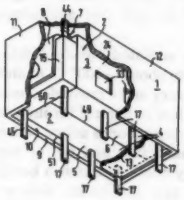
Werner Minks, Heroldsberg-Kleingeschaidt, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 13, 1983, Ser. No. 541,716

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1982, 3239047

Int. Cl.⁴ H01H *45/02*

U.S. Cl. 335—202 **11 Claims**



1. Electromagnetic relay with terminal elements projecting therefrom and comprising:

a cup-shaped cover slidably and frictionally engaging with a pair of juxtaposed shells being self-aligned and self-locked relative to each other;

each shell having a plurality of said terminal elements being integral therewith and depending from one wall thereof;

said shells housing and complementary engaging an electromagnetic drive system so as to form continuous common bottom and side walls therewith;

terminal elements depending from both said system and said shells and projected outwardly from said common bottom wall;

said common bottom wall being offset from a rim of said cover;

a waterproof sealing compound filling the space in said offset and sealing all joints and seams of said bottom wall.

4,554,523

WINDING FOR STATIC INDUCTION APPARATUS

Atsushi Miki; Etsunori Mori; Minoru Hoshi, and Masaru Higaki, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

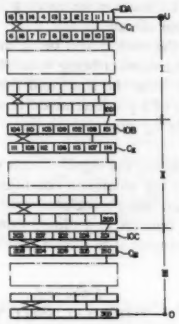
Continuation of Ser. No. 240,858, Mar. 5, 1981, abandoned. This application Oct. 5, 1984, Ser. No. 658,026

Claims priority, application Japan, Mar. 5, 1980, 55-26666

Int. Cl.⁴ H01F *15/14*

U.S. Cl. 336—70 **3 Claims**

1. A winding for a static induction apparatus comprising a plurality of interleaved coils each formed by winding a strand conductor in a radial spiral, said coils being stacked in the axial direction of the coils and electrically connected in series from a line terminal side to other terminal side, wherein said winding is divided into at least three blocks each including a plurality of ones of said interleaved coils, the interleaved coils belonging to the block located closer to said other terminal side being formed by winding a strand conductor which has a greater dimension in the radial direction of said coil and a smaller dimension in the axial direction of the coil as compared with those of the strand conductor forming the interleaved coils belonging to the block located closer to said line terminal side but has a substantially same cross-sectional area as the latter strand conductor, and the interleaved coils belonging to the block located intermediate the block located closer to said other terminal side and the block located closer to said line terminal side being formed by winding a strand conductor which has intermediate dimensions in both the radial and the axial directions of the coil but has substantially the same cross-sectional area as compared with the respective dimensions and cross-sectional area of the strand conductors forming the interleaved coils belonging to the block located closer to the other terminal side and the block located closer to the line terminal side, whereby the number of turns of each of the interleaved coils belonging to the respective blocks are progressively increased from the block located closer to said other terminal side to the block located on said line terminal side.



4,554,524

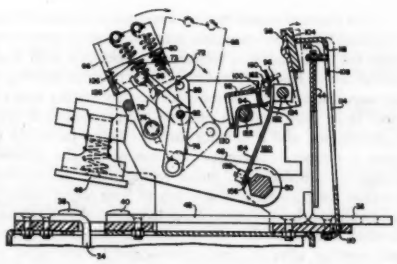
SECONDARY CIRCUIT BREAKER FOR DISTRIBUTION TRANSFORMER WITH INDICATOR LIGHT SWITCH MECHANISM

Raymond J. Radus, Monroeville Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 23, 1984, Ser. No. 643,511

Int. Cl.⁴ H01H *37/52*

U.S. Cl. 337—3 **9 Claims**



1. A distribution transformer comprising:

a housing;

a transformer within the housing;

a circuit interrupter disposed within the housing and operable between a closed position permitting current flow through the transformer and an open position interrupting flow through the transformer, the circuit interrupter being operable to automatically trip to the open position upon overload current conditions through the transformer;

the circuit breaker including a releasable latch arm operable to maintain the circuit breaker in closed position;

a latch plate movable between latched and unlatched positions of said arm;

a reciprocable cam movable between unlatched and latched

positions of the plate and having a cam surface engageable with the plate, reciprocable trip means operable upon overload current conditions to rotate the cam to the unlatched position;

signal means for indicating when overload current conditions exceed a predetermined level and including a switch arm and a moving contact on the arm, the arm being movable with the cam for moving the contact to open and close a signal circuit;

the cam and the switch arm being mounted on a rotatable shaft and the contact being mounted on a portion of the switch arm from the shaft and the cam surface being a circular arc of a predetermined constant radius;

the contact being movable to open and close the signal circuit;

the contact closing the signal circuit during rotation of the cam toward the unlatched condition; and

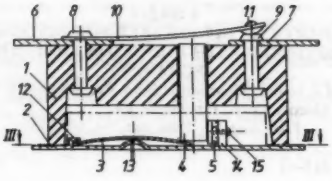
magnetic means being associated with the contact for maintaining the contact in a closed condition so long as the circuit interrupter is in closed position.

4,554,525

THERMAL SWITCH

Helmut Bayer, Vienna, Austria, assignor to Electrovac Fabrikation Electrotechnischer Spezialartikel Gesellschaft mbH, Vienna, Austria

Filed Mar. 1, 1983, Ser. No. 471,108
Claims priority, application Austria, Mar. 3, 1982, 831/82
Int. Cl.⁴ H01H *37/52*
U.S. Cl. 337—356 **12 Claims**



1. In a thermal switch having a temperature sensor formed of a thermal bimetallic snap disk, said temperature sensor cooperating via a displaceable transmission member with a contact system which has a displaceable contact carrier bearing at least one movable contact, the movable contact resting under spring force in its closed-circuit position of rest against at least one fixed contact, and a locking member being provided which, upon a temperature-caused movement of the transmission member, is displaceable, under spring force, in the direction towards the transmission member at least approximately perpendicular to the direction of displacement of said transmission member and holds the contact carrier fast in its open-circuit end position after a temperature-caused movement of said carrier, the improvement comprising

said disk having a point of attack upon said transmission member, which point of attack lies on that end of said transmission member which faces away from the contact system,

said disk being arranged with two support points at least approximately in a plane lying parallel to the direction of displacement of said transmission member,

a first said support point lying on that edge of said disk which is opposite said point of attack and a second said support point lying between said point of attack and said first support point, and

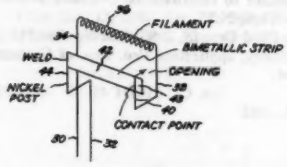
said locking member being arranged at that end of said transmission member which faces away from said contact system.

4,554,526

FLUORESCENT LAMP WITH IRON-NICKEL BIMETAL FILAMENT SWITCH

Rodger H. Bricknell, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 23, 1984, Ser. No. 643,577
Int. Cl.⁴ H01H *37/52*
U.S. Cl. 337—379 **4 Claims**



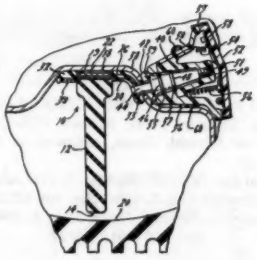
1. A thermally actuated switch resistant to thermally induced stresses from about −100° C. to about +600° C. which comprises a stationary and a movable contact member adapted to close to allow flow of current through said switch, a continuously movable arm anchored at one end and disposed to urge said movable contact into and out of electrical engagement with the stationary contact, said arm being formed of an iron-nickel bimetal of two iron-nickel bialloys in which the two metals of the bimetal are each selected from the Fe-Ni binary system in the range of 25 to 45 wt % Ni, said bimetal being adapted to low rates of movement at −100° C. and at +500° C. and being adapted to its highest rate of movement at about 200° C.

4,554,527

TIRE HEIGHT SENSOR WITH VALVE STEM ATTACHING TRANSMITTER MODULE

George H. Muller, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 27, 1980, Ser. No. 134,599
Int. Cl.⁴ B60C *23/00*
U.S. Cl. 340—58 **10 Claims**



1. A pneumatic tire profile height sensor system including:

a wheel rim for mounting a pneumatic tire;

a compressible probe extending radially from the inside of said wheel rim;

a power source between said probe and said wheel rim for generating electrical energy in response to said probe touching the inside casing of a pneumatic tire mounted on said wheel rim;

a radio frequency transmitter mounted external of said wheel rim and being electrically connected to said internal power source;

an inflation valve adjacent said probe and extending through said wheel rim, wherein said transmitter attaches to the externally extended portion of said wheel valve;

wherein said externally extending portion of said inflation valve has a base portion against said wheel rim, an extreme end opening and a plurality of exposed electrical contacts, between said base and said opening, being electrically connected to said power source; and

said radio frequency transmitter is encased within an inflation valve cap and contains a plurality of electrical contacts disposed to contact corresponding ones of exposed contacts on said inflation valve when said cap is attached to said valve.

4,554,528

VEHICLE TIRE PRESSURE MONITORING SYSTEM

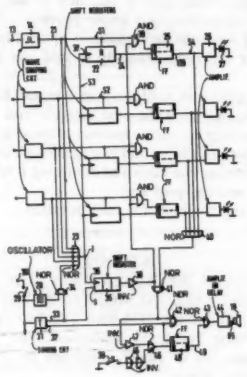
Rainer Burkel, Asperg, and Cornelius Peter, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 23, 1983, Ser. No. 525,724

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1982, 3232919

Int. Cl.⁴ B60C *23/02*

U.S. Cl. 340—58 **11 Claims**



1. Vehicular tire pressure monitoring system for a plurality of wheels (**10**) to be monitored, having

a plurality of pressure transducers (**11, 12**), one each being associated with a wheel of the vehicle and providing, respectively, "correct pressure" or "low pressure" signals upon each revolution of the respective wheel, said signals forming a plurality of signal trains (**S1, S2**) associated with the respective wheels;

a signal processing and evaluation network (**15**) having counters (**22**), each having a reset terminal, one each associated with a respective wheel;

and a plurality of warning indicators (**26, 27**), one each associated with a respective wheel and providing a warning indication of low tire pressure,

said system comprising

a combining logic circuit (**23**) including a NOR-function element (**23**), having its input connected to the outputs (**21**) of the transducers (**11, 12**) of all the wheels, in parallel, to receive the signal trains (**S1, S2**) of all the wheels, combine said signal trains, and provide combined output signals (**S3**);

a connection means (**J**) from said combining logic circuit, the output from the combining logic circuit being formed by said connection means (**J**) to form common junction which, in turn, is connected to the count inputs (**37**) of all of said counters (**22**);

means (**13, 14**) for connecting the respective transducers (**11, 12**) to the respective reset terminals (**R**) of the associated counters (**22**) to reset the respective counters when the transducer provides to the respective counters "correct pressure" signals, but failing to reset the respective counter upon providing "low pressure" signals;

means (**24, 25, 28**) for connecting the shift output of the respective counters to the respective associated indicators, shifting of the counters to fully loaded condition being indicated by the respective warning indicator (**26, 27**) to thereby provide a warning indication signal indicative of low pressure at the respective tire after the associated counter has been fully loaded by the combined output signals (**S3**) derived from those transducers which have still provided "correct pressure" signal trains (**S2**); and

an oscillator (**28**) energizeable by connection of a vehicle main switch (**29**), the output of the oscillator (**28**) being connected to a further input of said NOR-function element (**23**) to pretest the warning indicators (**26, 27**) and operability of the combining logic circuit (**23**), the connection means (**J**) from said combining logic circuit, the counters (**22**) and the connection means (**24, 25, 28**) connecting the shift output of the respective counters to the respective associated indicators.

4,554,529

METHOD FOR CONVERTING BINARY DATA TRAIN

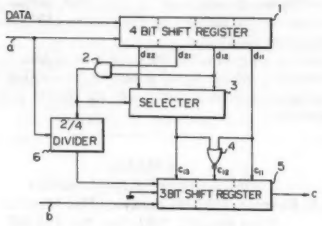
Yoshiaki Moriyama, and Kenji Yamagata, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 28, 1982, Ser. No. 437,129

Claims priority, application Japan, Oct. 29, 1981, 56-173258

Int. Cl.⁴ H03K *13/24*

U.S. Cl. 340—347 DD **7 Claims**



1. A method for converting a binary data train into recording data and recording the same on a recording medium comprising:

a first step for dividing said binary data train into a plurality of successive M-bit (M being a natural number) data blocks;

a second step for converting each of said M-bit data blocks into an N-bit (N being a natural number and $N \geqq M+1$) data block, said N-bit data block being one of a plurality of bit patterns corresponding respectively to bit patterns of said M-bit data blocks;

a third step for converting a predetermined data block in every L (L being a natural number) data blocks of said N-bit data block into a J-bit (J being a natural number and $J \geqq N+1$) data block, said J-bit data block being one of a plurality of bit patterns corresponding to said bit patterns of N-bit data block; and

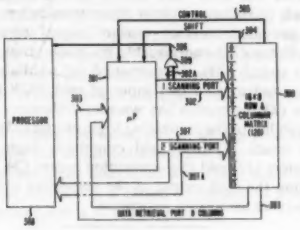
a step for recording a recording signal obtained through the data conversion of said first through third steps on a recording medium;

wherein at least a predetermined bit pattern of said N-bit data block corresponds to at least two bit patterns of said J-bit data block, and said third step includes a step for selecting one of said at least two bit patterns of J-bit data block corresponding to said predetermined bit pattern of the N-bit data block so that the dc and low frequency components of said recording signal are minimized.

4,554,530
METHOD AND APPARATUS FOR SCANNING A MATRIX OF SWITCHABLE ELEMENTS

Richard F. Mussmann, Indianapolis, Ind., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 21, 1981, Ser. No. 333,066
Int. Cl.[4] G06F *3/02*
U.S. Cl. 340—365 S **4 Claims**



1. A method of scanning a matrix (**300**) having switchable elements using a first processor (**301**) having ports (**302, 303,** and **307**) comprising data input and output leads, the first processor performing the steps of:

scanning the matrix using the output leads (**302, 307**);

sensing a state change on at least one input lead resulting from a change in status of the switchable elements of the matrix;

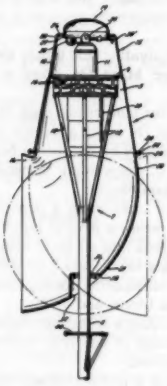
outputting a code indicative of the change in status of the switchable elements on at least one output lead that is connected in parallel to the matrix (**300**) and a second processor (**308**); and

outputting a signal when the code is to be read by the second processor, which signal is output on another output lead that is connected in parallel to the matrix and the second processor.

4,554,531
OMNIDIRECTIONAL SIREN

James E. Biersach, 5231 W. Parkview Dr., Mequon, Wis. 53092

Filed Dec. 27, 1982, Ser. No. 453,702
Int. Cl.[4] G08B *3/00*
U.S. Cl. 340—387 **7 Claims**



1. A siren of the type comprising an elongated horn which has a closed end and which flares along its length from said closed end to a wide mouth at its opposite end, a sound generator in the closed end portion of said horn comprising an annular siren stator having an axis, an inlet, radially outwardly opening outlets and a siren rotor in said siren stator rotatable on said axis to draw air through said inlet and intermittently expel it through said outlets to generate sound energy that is concentrated by said horn and is emitted from the mouth thereof, and a motor by which the siren rotor is rotatably driven, said siren being characterized by:

A. an upright post;

B. stator supporting means on an upper portion of said post securing the siren stator in fixed coaxial relation to the post;

C. said motor being mounted on top of the siren stator;

D. said inlet being at the bottom of the siren stator;

E. the closed end portion of said horn comprising

(1) a frustoconical downwardly flaring portion surrounding said motor and coaxially surrounding the siren stator in radially spaced relation thereto and

(2) a dome-like portion extending across and closing the upper end of said frustoconical portion, said closed end portion having in its interior a downwardly facing annular surface concentric to said axis;

F. the horn having a lower portion into which said frustoconical portion opens unrestrictedly downwardly and which curves downwardly and to one side of said post from said frustoconical portion, said lower portion

(1) defining a mouth that is wholly spaced below the sound generator and opens radially to said one side of the post and

(2) having a bottom wall portion wherein there is an aperture through which the post extends; and

G. horn supporting and drive means enclosed within the closed end portion of the horn and engaging said annular surface

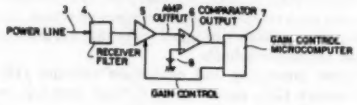
(1) for supporting the horn and confining it to rotation about said axis and the post and

(2) for driving the horn for such rotation.

4,554,532
AUTOMATIC RECEIVER GAIN CONTROL IN CENTRALIZED MONITOR SYSTEM

Masahiro Ise, Kashihara; Hidehiko Tanaka, Tenri; Katsuyuki Machino, Nara; Toshiyuki Matsubara, and Teiji Terasaka, both of Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 5, 1983, Ser. No. 455,770
Claims priority, application Japan, Jan. 11, 1982, 57-3178
Int. Cl.[4] G08B *23/00*; H04M *11/04*
U.S. Cl. 340—501 **8 Claims**



1. An automatic receiver gain control in a centralized monitor system having a master monitoring panel which periodically communicates with one or more remote monitoring units over a channel, comprising:

receiving means for monitoring said channel to receive signals present thereon;

amplifier means, operatively connected to said receiving means, for amplifying said signals monitored thereby to develop amplified signals at its output, the amount of amplification of said amplifier means being controllably variable;

means for detecting the presence of said communications within said amplified signals, said communications being represented by one and zero states where one of said states corresponds to the presence of a voltage and the other state by the absence of a voltage; and

control means, responsive to said means for detecting, for controlling the amount of amplification of said amplifier

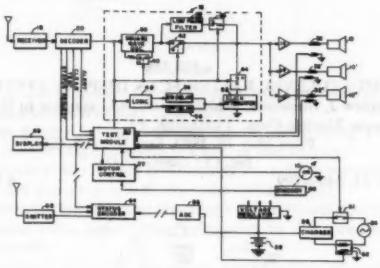
means, said control means increasing the amount of amplification of said amplifying means if no communication is sensed for a period of time greater than the period between periodic communications, said control means decreasing the amount of application if a communication is sensed which has no states corresponding to the presence of voltage therein for a period of time greater than the period between periodic communications.

4,554,533

METHOD OF AND APPARATUS FOR THE TESTING OF WARNING SYSTEMS

John J. Bosnak, Old Saybrook, Conn., assignor to Whelen Engineering Company, Inc., Deep River, Conn.

Filed Sep. 26, 1983, Ser. No. 535,579
Int. Cl.[4] G08B *29/00*; H04M *5/00*
U.S. Cl. 340—514 **20 Claims**



1. In an electronic siren system, the system including a tone generator and at least a first loudspeaker, the loudspeaker having a voice coil and being responsive to the energization of the tone generator to produce an audible sound commensurate with the output frequency of the tone generator, the improvement comprising:

means for generating a test command signal

means responsive to the test command signal for energizing the tone generator and varying the output frequency of the tone generator from the audible range to a frequency above the audible range;

means for sensing the flow of current at the frequency above the audible range through the loudspeaker voice coil and producing a signal indicative of such current flow; and

means for storing the signal produced by said sensing means.

4,554,534

CONTROL CIRCUIT FOR A MULTI-BLOW FORMING PROCESS

William J. Jones, Toledo, Ohio, assignor to Helm Instrument Company, Maumee, Ohio

Filed Feb. 22, 1983, Ser. No. 468,481
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—665 **32 Claims**

1. A control circuit for measuring the forces applied to a workpiece during two blows of a multi-blow forming process comprising:

load sensor means for generating a signal representing the amount of force applied to the workpiece during each blow of the forming process;

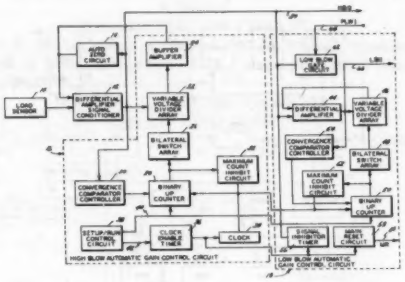
first amplifier means connected to said load sensor means for generating a first amplified signal;

first gain control means connected to said first amplifier means for adjusting the amount of amplification of said first amplified signal to a first predetermined level;

logic control means connected to said first amplifier means for generating a first enable signal during a first blow in the forming process and for generating a second enable signal during a second blow in the forming process;

second amplifier means connected to said first amplifier means for generating a second amplified signal;

second gain control means connected to said second amplifier means for adjusting the amount of amplification of said second amplified signal to a second predetermined level; and



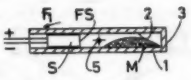
means responsive to said first and second amplified signals and said first and second enable signals for indicating the forces applied to the workpiece during the first and second blows of the forming process.

4,554,535

METHOD AND APPARATUS FOR OBTAINING ELECTRICAL SIGNALS CORRELATED WITH THE POSITION OF A MASS OF MERCURY IN INSTRUMENTS AND THE LIKE

Pier-Luigi Floris, and Yvonne O'Toole, both of Via Pitzolo 23, I 09100 Cagliari, Italy

Filed Jul. 20, 1983, Ser. No. 515,526
Claims priority, application Italy, Jul. 27, 1982, 9482 A/82
Int. Cl.[4] G08B *21/00*; G01L *9/10*
U.S. Cl. 340—689 **3 Claims**



1. A method of obtaining electrical signals indicative of the tilt angle with respect to the horizontal of an object tiltable about a horizontal axis which method comprises: providing a straight tube of non-metallic material with one end thereof closed; partially filling said tube with a mercury mass; fitting a proximity sensor fluid-tight into the other end of said tube; affixing said tube to said tiltable object with said tube in horizontal position; including said proximity sensor in a high frequency oscillating circuit; deriving from said oscillating circuit one or more signals corresponding to the power absorbed by the oscillating circuit at the various positions of said mercury mass relative to the active face of said sensor.

4,554,536

LOGIC TIMING DIAGRAM DISPLAY APPARATUS

Ronald M. Jackson, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

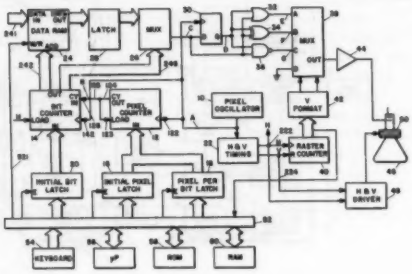
Filed Mar. 23, 1983, Ser. No. 478,114
Int. Cl.[4] G06F *3/14*
U.S. Cl. 340—747 **10 Claims**

1. A display apparatus for displaying a logic timing diagram on a raster scan type display device, comprising:

memory means for storing representations of a logic signal consisting of digital bits to be displayed, the stored representations of said logic signal in said memory means being read repeatedly in synchronism with the raster scan opera-

tion of said display device, wherein a predetermined number of bits are read for each of a plurality of raster lines;

delay means for delaying the logic signal from said memory means by a predetermined time shorter than the time for one bit of the logic signal to be read from said memory means to provide a delayed logic signal; and



logic gate means coupled to said memory means and said delay means to receive the logic signal from said memory means and the delayed logic signal from said delay means for generating an intensity control signal comprising blanking levels and turn-on levels for said raster scan device.

4,554,537

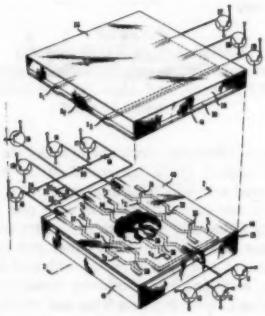
GAS PLASMA DISPLAY

George W. Dick, Sinking Spring, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 27, 1982, Ser. No. 437,154

Int. Cl.[4] G09F *9/313*

U.S. Cl. 340—775 **12 Claims**



12. A display device comprising:

first and second substrates placed so as to define a gap region between them;

a gas capable of forming a glow discharge occupying the gap;

first and second arrays of electrodes formed in the gap region, covered by dielectric layers, and positioned so as to form crosspoint regions between the electrodes of the two arrays, said first array comprising a plurality of at least pairs of electrodes spaced in at least the crosspoint regions so that a glow discharge may be sustained at the surface of the dielectric between the electrodes of each pair;

means for supplying a voltage selectively to the electrodes of the first and second arrays in order to select pairs of electrodes of the first array for initiation and extinction of a display glow discharge at desired crosspoint regions by accumulation of charge on the portions of the dielectric over the selected electrodes of the first and second array;

means for supplying a voltage to another electrode in the first array in the desired crosspoint region sufficient to transfer the charge accumulated over the electrode in the second array to the dielectric portion over the said another electrode; and

means for supplying a voltage to both electrodes of each pair of electrodes in the first array to sustain glow discharges between the pairs of electrodes selected for glow discharges at the desired crosspoint regions.

4,554,538

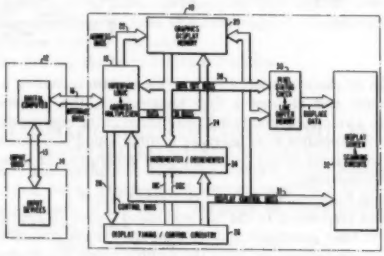
MULTI-LEVEL RASTER SCAN DISPLAY SYSTEM

Matthew J. Bieneman, Middle River, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 25, 1983, Ser. No. 498,212

Int. Cl.[4] G09G *1/00*

U.S. Cl. 340—799 **6 Claims**



2. A graphics display system including means for non-destructive relocation of image elements shared by a plurality of images, comprising:

(a) a display screen divided into a matrix of display elements (pixels), during normal operation each of said display elements being used to display an image having a first illumination state, all other display elements having a second illumination state;

(b) an addressable multiple storage location digital memory with each of said display elements being associated with a specific storage location, each of said storage locations providing storage capacity for a multi-bit digital number, a selected value of said stored digital number corresponding to said first illumination state, each additional unique binary value corresponding to said second illumination state and to a unique number of images intersecting at and sharing a display element associated with said storage location;

(c) first control means for selectively reading digital numbers from said digital memory to generate a raster scan video signal;

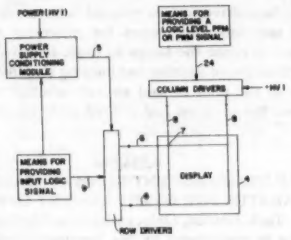
(d) means for coupling said video signal to said display screen to display a selected image;

(e) second control means for selectively changing the value of digital numbers stored in said digital memory to change the number of independent images associated with said digital number.

4,554,539
DRIVER CIRCUIT FOR AN ELECTROLUMINESCENT MATRIX-ADDRESSED DISPLAY

Steven P. Graves, Westlake Village, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 8, 1982, Ser. No. 440,116
Int. Cl.⁴ G09G *3/30*
U.S. Cl. 340—805 **8 Claims**



1. A driver circuit for a thin film AC electroluminescent matrix-addressed display comprising:

row drivers having switching means for applying a timed ramp voltage to a selected row of said display;

a single power supply conditioning module for providing all said row drivers with the same voltage input;

means for providing an input logic signal to said row driver, said logic signal being referenced to said conditioning module;

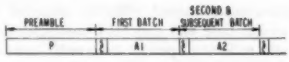
a column driver having means for switching selected columns from a first to a second voltage, said first voltage being insufficient and said second voltage being sufficient to cause electroluminescence at a selected pixel in said display when combined with said ramp voltage; and

a means for providing an input logic level pulse-modulated signal to said column driver, whereby said column switching is timed to coincide with a selected voltage from said ramped voltage and thereby to produce a differential column and row voltage at said selected pixel that provides the desired brightness at said selected pixel.

4,554,540
SIGNAL FORMAT DETECTION CIRCUIT FOR DIGITAL RADIO PAGING RECEIVER

Toshihiro Mori, and Koichi Nagata, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Japan

Filed Nov. 19, 1982, Ser. No. 443,004
Claims priority, application Japan, Nov. 19, 1981, 56-185762
Int. Cl.⁴ H04Q *7/00;* **H04B** *1/16;* **G08B** *29/00;* **H04L** *7/00*
U.S. Cl. 340—825.44 **8 Claims**



1. A signal detection circuit for a digital radio paging receiver, including means for receiving and demodulating a carrier wave modulated with a calling signal which includes a synchronization codeword having n bits, n being an integer not less than 2; register means having m stages for storing the demodulated output in response to clock pulses having a frequency f_0, m being an integer not less than 2; means for generating said clock pulses; combination circuit means, including at least one inverter circuit and at least one direct connection which are respectively coupled to the outputs of said register means such that outputs of said combination circuit means become a predetermined logical level when said register means stores said synchronization codeword;

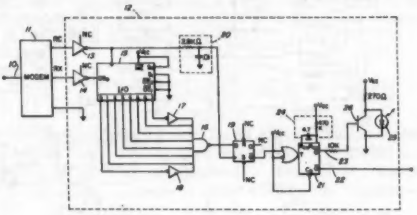
scanning means for sequentially scanning said outputs of said combination circuit means in response to a scan signal of a frequency kf_0, k being equal to or greater than n; and

means for determining whether said synchronization code word has been received, in response to output of said scanning means.

4,554,541
FLAG DETECTION CIRCUIT

Jonas R. Bielkevicius, Newton, and Paul M. Schmitt, Needham, both of Mass., assignors to GTE Communications Products Corporation, Stamford, Conn.

Filed Sep. 12, 1983, Ser. No. 531,516
Int. Cl.⁴ H04Q *00/00*
U.S. Cl. 340—825.68 **4 Claims**



1. A flag detection circuit for detecting the binary flag "01111110" serially transmitted through a telecommunication channel, comprising:

receiving means for receiving serial digital bits from said telecommunication channel;

clock means for providing clock pulses synchronized with said digital signals;

an octal shift register arranged with said receiver means and said clock means for storing the eight most recent consecutive bits from said telecommunication channel and having an eight bit output at which the eight stored bits appear in parallel;

a NAND gate having an eight bit input coupled to the eight bit output of said octal shift register and having an output; said eight bit input has a most significant bit input and a least significant bit input;

a first inverter interposed in the most signifcant bit input of said NAND gate; and

a second inverter interposed in the least significant bit input of said NAND gate;

said NAND gate arranged to provide a logic "0" output upon the presence of all "1" inputs.

a latched gate having an input coupled to the output of said NAND gate; and

a delay circuit interposed between said clock means and said latched gate for delaying said clock pulses;

said latched gate having an output arranged to provide a logic "1" at said output of said latched gate upon the presence of a logic "0" input and a delayed clock pulse, said logic "1" indicative of a detected flag.

4,554,542
GUARD TONE CAPTURE METHOD

Arman V. Dolikian, Palatine, Ill., assignor to Motorola, Inc., Rolling Meadows, Ill.

Filed Dec. 10, 1982, Ser. No. 448,457
Int. Cl.⁴ H04B *1/16;* **H04Q** *1/38*
U.S. Cl. 340—825.76 **14 Claims**

1. A decoder for receiving and decoding a series of coded messages wherein a first amplitude of a particular frequency ends a first coded message and a second amplitude of said particular frequency begins a second coded message, said decoder comprising,

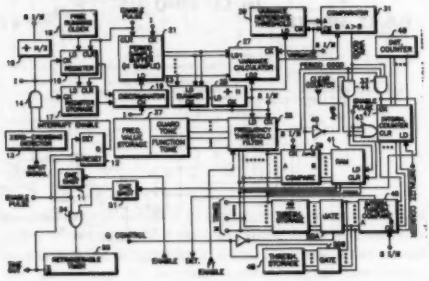
receiver means for receiving said coded message,

detector means responsive to said receiver means for detecting said particular frequency, said detector means having at least first and second states, wherein said detector means can detect said first and second amplitudes of said particular frequency in said first state and said second amplitude of said particular frequency in said second state,

sensor means responsive to said receiver means for detecting a threshold amplitude of said coded message,

control means responsive to said detector means and said sensor means to control the state of said detector means,

function means response to said receiver means and enabled by said control means,



said control means being responsive to detection of said first amplitude of said particular frequency by said detector means to hold said function means in an enabled condition, said control means also being responsive to detection of a threshold amplitude by said sensor means to change said detector means from said first state to said second state thus allowing said detector means to detect said second amplitude of said particular frequency, said control means disabling said function means in response to a detection of said second amplitude of said particular frequency by said detector means in said second state.

4,554,543

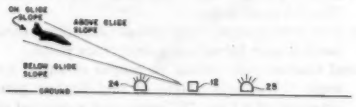
GLIDE SLOPE INDICATOR SYSTEM

Ivan S. Wyatt, Gilbert, Ariz., and Harry L. Task, Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 8, 1983, Ser. No. 473,392

Int. Cl.[4] G08C *5/00*

U.S. Cl. 340—948 **6 Claims**



3. A visual approach indicator system which utilizes a source of light such as landing lights emitted by an incoming aircraft to guide the aircraft along a desired glide slope to a runway, comprising:

a spherical objective lens of the converging type oriented with its optical axis in the direction of the incoming aircraft;

a cylindrical lens placed adjacent to said spherical objective lens with the height of the cylinder being in the vertical direction and perpendicular to said optical axis such that said spherical/cylindrical lens combination shapes the light from the light source into a line image;

a photodiode array in which each photodiode is electrically independent from each other, said array being mounted at the back focal plane of said objective lens such that said line image strikes and energizes at least one of the photodiodes in said array;

logic means connected to said photodiode array such that for each energized photodiode a determination is made as to whether said aircraft's position is above, below or on said desired glide slope by comparing said line image position with a reference position;

indicator means which includes at least two indicator lamps located on or adjacent to said runway; and

an interface/driver means coupled between said logic means and said indicator means for powering said indicator means to cause the lamps to flash, to burn steadily, or a combination of flashing and burning steadily, to communicate to the pilot of said aircraft whether the aircraft is above, below or on said desired glide slope.

4,554,544

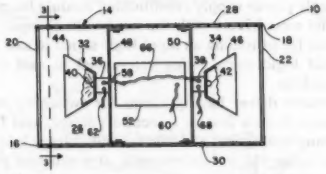
DIFFUSE INCANDESCENT RUNWAY MARKER LIGHT APPARATUS FOR OVERT/COVERT OPERATION

Harry L. Task, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 26, 1983, Ser. No. 536,142

Int. Cl.[4] G08G *5/00*; **B64F** *1/18*

U.S. Cl. 340—953 **4 Claims**



4. Diffuse incandescent marker light apparatus for aiding overt or covert aircraft landing operation at an austere runway, comprising:

a. a housing having a pair of generally parallel top and bottom walls and a pair of generally parallel side walls interconnecting said top and bottom walls said walls defining a pair of open opposite ends of said housing;

b. a visible light diffusing plate mounted to said housing across a first of said ends;

c. an infrared light diffusing plate mounted to said housing across the second said end;

d. a pair of light socket bases mounted within said housing, each said base mounted near a corresponding diffusing plate;

e. an incandescent light bulb mounted in each said light socket base;

f. a frusto-conical shaped reflector mounted to each said light socket base and generally surrounding a said bulb, each said reflector opening outwardly toward the corresponding said diffusing plate for directing the light emanating from said bulb through said corresponding diffusing plate;

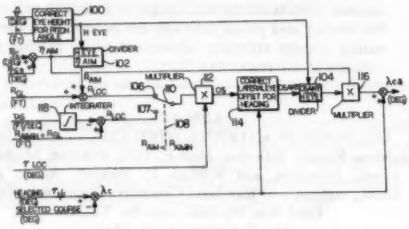
g. a d.c. battery operatively connected to said light bulbs for providing an electrical power source to said bulbs; and

h. a three-position electrical switch mounted on the exterior of said housing and operatively interconnecting said battery and said light bulbs whereby at a first position of said switch power is provided to the light bulb near said visible light diffusing plate and the light bulb near said infrared light diffusing plate is off, at a second position of said switch power is provided to the light bulb near said infrared light diffusing plate and the light bulb near said visible light diffusing plate is off, and at a third position of said switch both said light bulbs are off.

4,554,545
CONFORMAL HEAD-UP DISPLAY

James R. Lowe, Rancho Palos Verdes, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Continuation of Ser. No. 202,167, Oct. 30, 1980, Pat. No. 4,454,496. This application May 2, 1984, Ser. No. 606,021
The portion of the term of this patent subsequent to Jun. 12, 2001, has been disclaimed.
Int. Cl.[4] G08G *5/00*; G01S *1/16*
U.S. Cl. 340—980 **11 Claims**



1. Apparatus for providing guidance information to an aircraft pilot, the aircraft having an attitude, location and motion relative to the earth, in the form of a conformal head-up display (HUD) which comprises:

means for generating an aircraft symbol on the display that simulates the attitude, location and motion of the aircraft relative to the earth;

means for generating symbols that simulate on the display selected ground cues in position and orientation which superimpose over actual selected ground cues as seen by the pilot when they are visible through the display; and

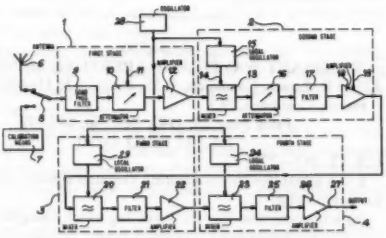
means for generating an aim symbol that is positioned on the display to provide a reference to which the aircraft symbol is directed for proper operation of the aircraft in selected flight modes

wherein lateral guidance control error is displayed to the pilot by the angle said aircraft signal is deflected laterally relative to a desired touch-down point on a visible runway.

4,554,546
RECEIVER FOR A SOUNDER PERMITTING THE DETECTION AND MEASUREMENT OF PHONOMENA LINKED WITH THE EARTHS ENVIRONMENT

Louis Herbreteau, Bretigny sur Orge, and Alain Le Roy, Vanves, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Nov. 18, 1982, Ser. No. 442,581
Claims priority, application France, Nov. 24, 1981, 81 21969
Int. Cl.[4] G01S *13/95, 7/40*
U.S. Cl. 343—5 W **8 Claims**

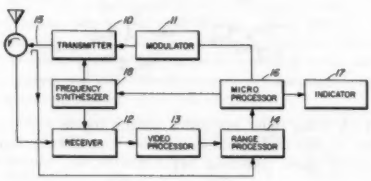


1. A receiver for a sounder for the detection and measurement of a phenomenon linked with the earth's environment, comprising: a reception channel having one input for receiving echo signals of electromagnetic signals emitted towards a phenomenon, means of calibrating the amplitude and frequency of signals to be received for providing a test signal of a predetermined amplitude and frequency, said reception channel comprising a first stage having in series means for filtering, attenuating and amplifying the echo signals received, a second stage connected in series with said first stage and comprising in series means for the frequency conversion, attenuation, filtering and amplification of the signals received from the first stage, and a third stage comprising in series means for frequency conversion, filtering and amplification of the signals received from the second stage, the attenuation means of the first and second stage being independently controllable for each frequency of the signals received, in such a way that the signals from the respective amplification means have an amplitude higher than the amplitude of distortions produced by the reception channel and the amplitude of noise signals received by the reception channel.

4,554,547
RANGE PROCESSOR FOR DME

Brendan J. Spratt, Boca Raton; David J. Pryor, N. Lauderdale; James B. Jones, Jr., Deerfield Beach; Dennis W. Davis, Boca Raton, all of Fla., and Richard V. Frazier, Jr., Boulder Heights, Colo., assignors to Allied Corporation, Morristown, N.J.

Filed Dec. 13, 1982, Ser. No. 449,064
Int. Cl.[4] G01S *13/08*
U.S. Cl. 343—7.3 **8 Claims**



6. In airborne distance measuring equipment including a transmitter for transmitting interrogation signals to a ground based station and a receiver for receiving reply signals from said ground based station, a range processor comprising,

a source of clock pulses;

means providing a trigger signal indicating transmission of an interrogation signal by said distance measuring equipment;

a counter for accumulating a continuous count of said clock pulses, the operation of said counter being initiated by said trigger signal said counter providing a multiple bit binary digital output in parallel format;

means providing a detected video signal upon receipt by said distance measuring equipment of a reply signal from said ground based station;

first memory means of the random access type including a plurality of storage locations, said storage locations being addressed sequentially by accumulated count from said counter;

logic means for incrementing the contents of the particular storage location of said first memory means being addressed whenever said detected video signal appears and for decrementing the contents of said particular storage location being addressed if no detected video signal appears;

second memory means of the parallel load type for storing the output count of said counter;

means for loading in parallel into said second memory means said output count of said counter existing at the time of appearance of each said detected video signal;

means for generating a range gate signal whenever the con-

tents stored at a particular location of said first memory means exceeds a threshold value;

means controlled by said range gate signal for preventing storage by said second memory means of output count of said counter for detected video signals appearing later than said range gate signal; and

means for blocking output from said second memory means until said range gate signal has been generated.

4,554,548

SIDE-LOBE SUPPRESSING UNIT FOR A PULSE RADAR APPARATUS

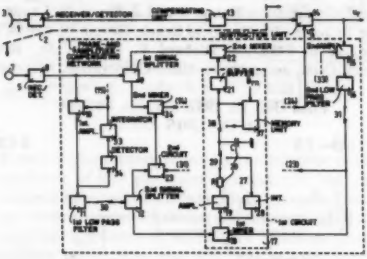
Albert Brilman, Bathmen, and Geert Koops, Haaksbergen, both of Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Sep. 23, 1982, Ser. No. 421,936

Claims priority, application Netherlands, Oct. 2, 1981, 8104485

Int. Cl.⁴ G01S *3/16, 13/00, 7/28*

U.S. Cl. 343—379 **2 Claims**



1. A pulse radar apparatus having means for suppressing noise signals and continuous wave interference signals in a received signal including target returns, said means comprising:

(a) a main transmission channel electrically-connected to a directional antenna for the intermediate-frequency detection of said received signal; and

(b) an interference canceller electrically-connected to said main transmission channel for selecting, from the intermediate-frequency-detected signal, target returns received from the major lobe of the directional antenna radiation pattern, said interference canceller comprising an omnidirectional antenna, an auxiliary transmission channel electrically-connected to the omnidirectional antenna and including means for the intermediate frequency detection of the received signal, a phase and amplitude compensating network electrically-connected to the auxiliary transmission channel, and a subtraction circuit electrically-connected to the main transmission channel and the compensating network, said compensating network responding to output signals from the subtraction circuit and the auxiliary transmission channel by applying to the subtraction circuit output signals which are equal in phase and amplitude to signals applied to the subtraction circuit by the main transmission channel, insofar as the output signals of the main transmission channel are weaker than those of the auxiliary transmission channel;

characterized in that the phase and amplitude compensating network comprises a first circuit electrically-connected to the auxiliary transmission channel and adapted to receive only output signals of a predefined phase, and a second circuit electrically-connected to the auxiliary transmission channel and adapted to receive only output signals of a phase in quadrature with said predefined phase, each of the first and second circuits comprising a first mixer electrically-connected to the subtraction circuit and the auxiliary transmission channel, a filter electrically-connected to said first mixer, and a second mixer electrically-connected to said filter and the auxiliary transmission channel, said phase and amplitude compensating network including means for combining the output signals from the second mixers of the first and second circuits to obtain the output signals applied to the subtraction circuit;

said phase and amplitude compensating network further comprising switching means for interrupting at preset intervals the signal supply from the auxiliary transmission channel to the first mixer of each of said first and second circuits, and wherein the filter of each of said first and second circuits comprises a negative feedback unit operable during said preset intervals for producing a compensating voltage effecting adjustment of an existing offset voltage of the respective filter.

4,554,549

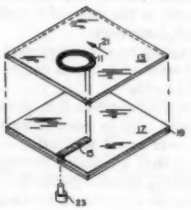
MICROSTRIP ANTENNA WITH CIRCULAR RING

Matthew Fassett, Billerica; John F. Toth, Reading; Michael L. Lewis, Arlington, and William F. Miccioli, Acton, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Sep. 19, 1983, Ser. No. 533,836

Int. Cl.⁴ H01Q *1/38, 13/10*

U.S. Cl. 343—700 MS **1 Claim**



1. A radar antenna comprising:

(a) a first and a second dielectric sheet in abutting relationship one to the other;

(b) a ground plane printed on, and covering, the free surface of the first dielectric sheet;

(c) at least one antenna element printed on the free surface of the second dielectric sheet, such antenna element having the shape of a ring, the mean circumference of such ring being equal to one wavelength of radio frequency energy at a desired frequency and in the effective air/dielectric medium;

(d) a feed line printed on an abutting surface of one of the dielectric sheets, such feed line being tangential to the antenna element and being terminated in an open circuit; and

(e) means for applying radio frequency energy to the feed line to couple such energy capacitively to the at least one antenna element.

4,554,550

RESONANT WAVEGUIDE APERTURE MANIFOLD

Alfred R. Lopez, Commack, N.Y., assignor to Hazeltine Corporation, Commack, N.Y.

Filed May 23, 1983, Ser. No. 497,349

Int. Cl.⁴ H01Q *13/10*

U.S. Cl. 343—771 **12 Claims**

1. An apparatus for monitoring radiated signals, said apparatus comprising:

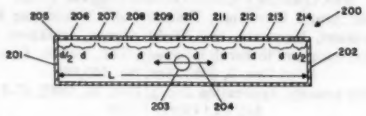
(a) a transmission line for directing electromagnetic energy in a predetermined frequency range, said line having first and second ends;

(b) means for sampling the radiated signals, said means including elements associated with said line;

(c) a transducer associated with said line for converting

energy having a frequency within the predetermined frequency range into an electrical signal having a corresponding frequency;

(d) said transducer having an impedance which is matched to said line as if said line had substantially non-reflecting terminations coupled to the first and second ends thereof;



(e) first means for creating a short circuit at the first end of said line; and

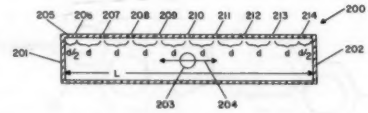
(f) second means for creating a short circuit at the second end of said line whereby said transducer is not impedance-matched to said first and second means so that the transducer output is independent of changes in temperature and frequency within the desired frequency range.

4,554,551

ASYMMETRIC RESONANT WAVEGUIDE APERTURE MANIFOLD

Richard F. Frazita, St. James, N.Y., assignor to Hazeltine Corporation, Commack, N.Y.

Filed May 23, 1983, Ser. No. 497,350
Int. Cl.⁴ H01Q *13/10*
U.S. Cl. 343—771 **12 Claims**



1. An apparatus for monitoring radiated signals, said apparatus comprising:

(a) a transmission line for directing electromagnetic energy in a predetermined frequency range, said line having first and second ends;

(b) means for sampling the radiated signals, said means including groups of elements associated with said line wherein adjacent groups have different phase, each group having N elements wherein adjacent elements within each group have different phases, where N is a positive even integer greater than one;

(c) a transducer associated with said line for converting energy having a frequency within the predetermined frequency range into an electrical signal having a corresponding frequency;

(d) said transducer having an impedance which is matched to said line as if said line had substantially non-reflecting terminations coupled to the first and second ends thereof;

(e) first means for creating a short circuit at the first end of said line; and

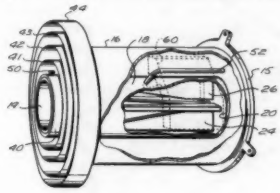
(f) second means for creating a short circuit at the second end of said line whereby said transducer is not impedance-matched to said first and seconds means so that the transducer output is independent of changes in temperature and frequency within the desired frequency range.

4,554,552

ANTENNA FEED SYSTEM WITH CLOSELY COUPLED AMPLIFIER

James L. Alford, and Robert E. Terry, both of Rancho Palos Verdes, Calif., assignors to Gamma-f Corporation, Torrance, Calif.

Filed Dec. 21, 1981, Ser. No. 333,016
Int. Cl.⁴ H01Q *13/02*
U.S. Cl. 343—786 **6 Claims**



1. A system for cooperation with a microwave antenna that receives signals in a group of channels, with the signals in adjacent channels being cross-polarized relative to each other, for passing amplified signals to associated processing equipment with low interference between the cross-polarized channels, comprising:

a waveguide feed coupled to the antenna and responsive to wave energy focused thereby, the waveguide feed comprising a waveguide of circular cross section disposed along a central axis and having an input end and an output end, the waveguide including means defining an electrical short across the output end, a wall and a plurality of internal orthogonally disposed ridges mounted within the wall to define orthogonal planes of preferred mode wave propagation, the internal ridges being of decreasing height in a direction toward the input end;

first and second orthogonally disposed probes coupled to the waveguide feed, each of the probes extending into the internal waveguide ridges to transmit wave energy from the waveguide, being in alignment with a different preferred propagation plane and extending through the wall of the waveguide feed with vertically polarized waves being detected at the first probe and horizontally polarized waves being detected at the second probe;

a housing disposed about the waveguide;

amplifier means mounted between the waveguide and the housing and directly connected to the probe means with no waveguide intermediate the amplifier means and probe means for amplifying signals from at least one of the probe means; and

means for adjustably positioning the waveguide within the housing, so as to permit the orientation of the waveguide to correspond to the angle of polarization of incoming wave energy.

4,554,553

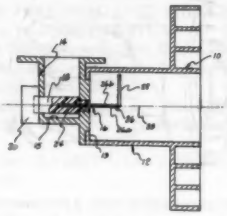
POLARIZED SIGNAL RECEIVER PROBE

Fay Grim, 565 Newburgh, Port Charlotte, Fla. 33952

Filed Jun. 15, 1984, Ser. No. 621,119
Int. Cl.⁴ H01P *1/165;* **H01Q** *13/02*
U.S. Cl. 343—786 **9 Claims**

1. A polarized signal receiver comprising a first waveguide of circular cross-section for receiving polarized electromagnetic signals applied to an open end thereof, said first waveguide having an axis of symmetry and another end closed by a rear wall, a second waveguide for transmitting polarized signals, said second waveguide having an axis of symmetry and said first and second waveguides being disposed with their axes of symmetry at a substantially 90° angle, a dielectric rod mounted through the rear wall of said first waveguide, said dielectric rod being rotatable around an axis of rotation aligned with the axis of symmetry of said first waveguide, a signal

transferring probe fixedly mounted in said dielectric rod for rotation thereby about the axis of rotation thereof, said signal transferring probe comprising a receiver probe portion disposed in said first waveguide in a plane orthogonal to the axis of symmetry of said first waveguide for receiving one of the polarized signals in said first waveguide, a signal launch probe portion extending into the second waveguide substantially perpendicular to the axis of symmetry of said second waveguide, said signal launch probe portion being disposed concentric within said dielectric rod, and a transmission line portion



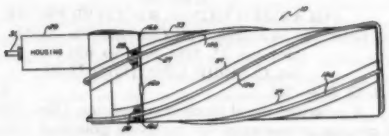
connecting said signal receiver probe portion to said signal launch probe portion, said transmission line portion having two integral oppositely directed and symmetrical generally U-shaped branch portions forming a rectangle disposed in said first waveguide in a single plane along the axis of symmetry of said first waveguide and perpendicular to the plane in which said signal receiver probe portion is disposed, and means for controllably rotating said dielectric rod and said signal transferring probe for transferring a selected one of said polarized signals from said first waveguide to said second waveguide at a peak of signal amplitude in said second waveguide.

4,554,554

QUADRIFILAR HELIX ANTENNA TUNING USING PIN DIODES

Ralph C. Olesen, Waterford, Conn.; Robert A. Sainati, Bloomington, Minn.; John J. Gropelli, Jr., Pawcatuck, and Andrew J. Stanland, Old Lyme, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 2, 1983, Ser. No. 528,825
Int. Cl.[4] H01Q *1/36*
U.S. Cl. 343—895 **12 Claims**



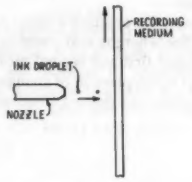
1. An antenna system comprising:
a resonant quadrifilar helix antenna having a plurality of arms with said arms grounded at a first predetermined location on each of said plurality of arms;
bias means for providing an electrical signal to said resonant antenna; and
short circuit means connected to said resonant antenna at a second predetermined location on each of said plurality of arms, said short circuit means for receiving said electrical signal and for providing a short circuit to ground at said second predetermined location on each of said plurality of arms.

4,554,555

RECORDING METHOD BY USE OF INKS

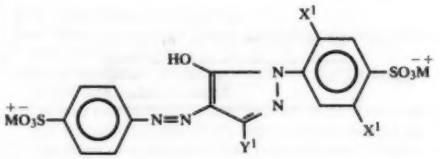
Tamotsu Aruga, Kamakura; Tadashi Fujii, Yokohama; Kakuji Murakami, Kawasaki, and Eiichi Akutsu, Ichikawa, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 9, 1983, Ser. No. 560,089
Claims priority, application Japan, Dec. 10, 1982, 57-215486
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—1.1 **14 Claims**



1. A recording method which comprises imagewise applying (1) an aqueous ink comprising at least one dye selected from the group consisting of the following dyes (a) through (d) onto (2) a recording medium containing at least one component selected from the group consisting of water soluble metal salts in which the metal has a valence of 2 or more, alkyl amine salts, polyamines and quaternary ammonium salts, whereby to form an image on said recording medium,

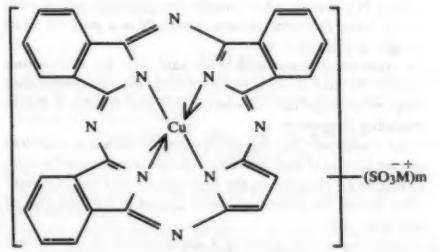
(a) a pyrazolone azo dye of the following formula I



I

where M^+ represents Li^+, Na^+, K^+, Cs^+, NH_4^+ or NR_4^{1+} wherein R^1 represents an alkyl group, X^1 represents F, Cl, Br, I or hydrogen, and Y^1 represents hydrogen, an alkyl group or —COO—M^+;

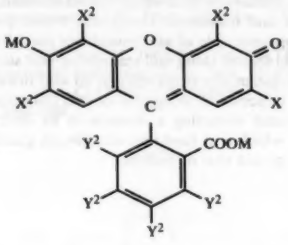
(b) a phthalocyanine sulfonate dye of the following formula II



II

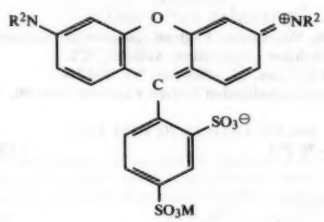
where M^+ is the same as that defined in the formula I, and m m is an integer of 2 to 4;

(c) a xanthene dye of the following formula III or IV



III

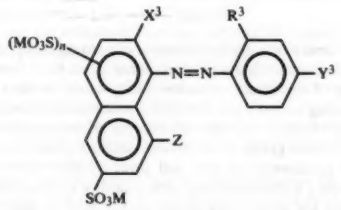
where M represents Li, Na, K, Cs, NH_4 or NR_4^1 wherein R^1 represents an alkyl group, X^2 represents Br, I or Cl, and Y^2 represents Br, I or Cl;



IV

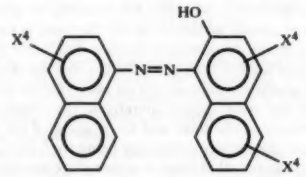
where M is the same as that in the formula III, and R^2 represents hydrogen or an alkyl group;

(d) an azo dye of the following formula V or VI



V

where n is an integer of 0 or 1, X^3 represents hydrogen or $-NH_2$, Y^3 represents hydrogen or $-NHR^1$ wherein R^1 represents an alkyl group, Z represents hydrogen, —OH or —COOM, and R^3 represents hydrogen, an alkyl group or $-SO_3M$ wherein M is the same as that defined in formula III;



VI

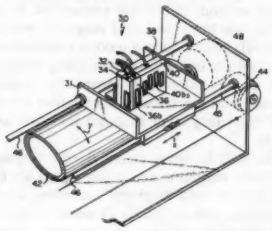
wherein X^4 represents hydrogen, $-SO_3M$ or —COOM in which M is the same as that defined in the formula III.

4,554,556

COLOR PLOTTER

Shinichi Hirata, Yamato, and Takuro Isayama, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 28, 1983, Ser. No. 489,423
Claims priority, application Japan, May 11, 1982, 57-78773
Int. Cl.[4] G01D *9/28, 15/18*
U.S. Cl. 346—49 **10 Claims**



1. A color plotter comprising:

plotting means for plotting graphic data on a sheet at a spacing therefrom;

a carriage for mounting said plotting means thereon;

first drive means for driving said carriage in a reciprocal movement in a first predetermined direction;

second drive means for driving the sheet in a reciprocal movement in a second predetermined direction which is perpendicular to the first direction;

control means for controlling the plotting means, the first drive means and the second drive means in a predetermined mode in which the graphic data is plotted in a colored pattern on the sheet; and

character printing means for printing out character data on the sheet at a spacing therefrom, said character printing means being mounted on the carriage, the control means controlling the plotting means, the first drive means, the second drive means and the character printing means selectively in the first predetermined mode; and in a second predetermined mode in which the character data is printed out on the sheet in a dot matrix;

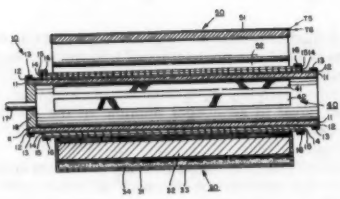
the plotting means comprising ink ejection head means for ejecting ink of a plurality of colors each from a nozzle allocated exclusively thereto.

4,554,557

THERMOMAGNETIC PRINTER

Toshifumi Kimoto; Hidemasa Todoh; Teruhiko Itami, and Koichi Saitoh, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 482,612, Apr. 6, 1983, abandoned. This application Apr. 22, 1985, Ser. No. 725,518
Claims priority, application Japan, Apr. 8, 1982, 57-58499
Int. Cl.[4] G01D *15/06*
U.S. Cl. 346—74.4 **8 Claims**



1. A thermomagnetic printer comprising:

a cylindrical recording drum rotating in a fixed direction, said recording drum including a transparent cylindrical base member, said base member being provided with a transparent electrically conductive layer on the surface thereof, said electrically conductive layer being provided with a photoconductive layer on the surface thereof, said photoconductive layer being provided with a magnetic recording layer of low Curie temperature on the surface thereof,

first and second electrodes connected to said electrically conductive layer and said magnetic recording layer, respectively, said first and second electrodes being provided at an end portion of said recording drum,

electric power supplying means for applying electricity between said electrically conductive layer and said magnetic recording layer through said first and second electrodes,

magnetic field applying means fixedly disposed at the vicinity of said magnetic recording layer, for applying a magnetic field to said magnetic recording layer,

light emitting means, fixedly disposed inside said transparent base member and operative as said recording drum rotates, for irradiating light representing an image to be reproduced, through said transparent base member and said transparent electrically conductive layer, onto portions of said photoconductive layer adjacent to portions of said magnetic recording layer to which said magnetic field is applied,

developing means for performing development of a magnetic latent image formed by the magnetization effect on portions of said magnetic recording layer to which said magnetic field is applied, said portions being selectively heated beyond the Curie point by said applying of electricity from said electric power supplying means and by said irradiation of light by means of said emitting means, said selectively irradiated portions becoming magnetized as they rotate away from the location of light irradiation within said magnetic field, said developement being performed by coating magnetic toner to said magnetized portions as said recording drum rotates, and

transferring means for transferring the developed image onto a paper.

4,554,558

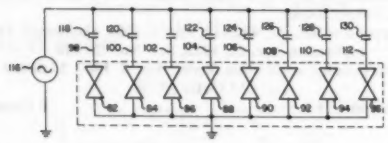
FLUID JET PRINT HEAD

William R. Beaudet, Melbourne, Fla.; Mark A. Pepper, Plano, and David H. Rester, Dallas, both of Tex., assignors to The Mead Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 496,329, May 19, 1983, abandoned. This application Jul. 16, 1984, Ser. No. 630,783

Int. Cl.⁴ G01P *15/18*

U.S. Cl. 346—75 **39 Claims**



37. A fluid jet print head for producing a plurality of jet drop streams of fluid at a predetermined frequency, comprising,

manifold means defining an elongated cavity therein, said cavity extending in its direction of elongation a distance not equal to an integer multiple of the wavelength of pressure waves through the fluid at the predetermined frequency,

an orifice plate, defining a plurality of orifices arranged in a row and mounted on the manifold means such that said orifices communicate with said cavity, and

stimulator means mounted in said cavity and spaced from said orifice plate, said stimulator means including a piezoelectric transducer which is elongated generally in the direction of elongation of said cavity, said transducer defining a plurality of slots which extend alternately from the side of said transducer facing said orifice plate and from the opposite side of said transducer partially therethrough and spaced along said transducer, said slots being in planes substantially perpendicular to said orifice plate and to the direction of elongation of said transducer, and said transducer extending a distance in its direction of elongation which is at least one wavelength greater than the length of said row of orifices.

4,554,559

THERMAL PRINT HEAD

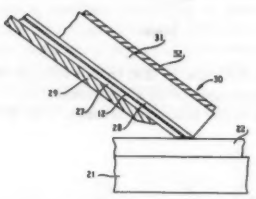
John S. Heath, Winchester, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1983, Ser. No. 504,104

Claims priority, application United Kingdom, Jun. 30, 1982, 82303425

Int. Cl.⁴ G01D *15/10;* **B41J** *3/02*

U.S. Cl. 346—76 PH **7 Claims**



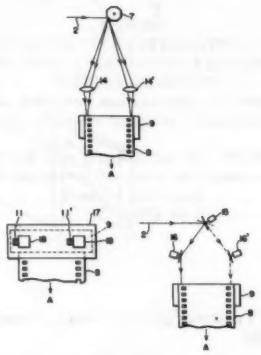
1. A print head assembly for non-impact printing comprising a body portion supporting a printed circuit print head formed as a plurality of electrodes on an insulating substrate, the electrodes extending across a portion of the substrate and having a first plurality of said electrodes terminating at one end thereof as a closely-spaced group of electrodes defining a line of print elements of predetermined size and print density, the body portion carrying a corresponding first plurality of conductors each disposed for unique one-to-one connection to said first plurality of electrodes, characterized in that the body portion is constructed to receive interchangeably any one of a plurality of such printed circuit print heads and includes registration means operable during installation of a head to control its position with respect to said body portion in an attempt to bring said electrodes on the head into the required registration with the conductors on the body portion and means operable to exert a clamping force on an installed print head to establish and maintain ohmic contact between any such electrodes and conductors in registration, said print head having an additional printed circuit electrode arranged, when the head is installed on said body portion, to contact a further conductor on the body portion, said further conductor being provided with two printed circuit guard conductors, on on each side of said further conductor and equal distant therefrom, the width of the additional electrode or the head and the spacing of the guard conductors, from the further conductor being such that lateral displacement of the installed head in either direction by more than a predetermined acceptable amount results in bridging, by said further electrode, of the gap between the further conductor and one of other of the guard conductors.

4,554,560

SIDE PRINTING APPARATUS

Takeshi Kanaoka, and Shigehisa Shimizu, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 21, 1983, Ser. No. 554,115
Claims priority, application Japan, Nov. 25, 1982, 57-206520
Int. Cl.[4] G01D *9/42;* **G03B** *17/24*
U.S. Cl. 346—108 **6 Claims**



1. A side printing apparatus for providing latent images of characters, numerals, symbols and the like on a photosensitive product moving with continuous motion, said apparatus comprising:

an oscillator for emitting a beam of laser light;

means for modulating said beam of laser light upon passing therethrough;

means for deflecting said modulated beam of laser light in accordance with the angular disposition thereof so as to scan the surface of a photosensitive product in a direction perpendicular to that in which said photosensitive product moves with continuous motion;

means for selectively setting patterns of characters, numerals, symbols and the like, of which the latent images are required to be provided on said photosensitive product and simultaneously producing signals in accordance with said patterns selectively set;

means driven by said product for detecting a moved length of said photosensitive product and to produce corresponding signals; and

means for controlling said modulating means by said signals from said pattern setting means and said detecting means so as to provide said required latent images on said photosensitive product at predetermined locations.

4,554,561

MULTI-CHANNEL ELECTRO-OPTIC PRINTER FOR PRINTING PLURAL IMAGE LINES AT ONCE

Joseph J. Daniele, Pittsford, and Kwok-leung Yip, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 11, 1983, Ser. No. 484,038
Int. Cl.[4] G01D *9/42*
U.S. Cl. 346—108 **10 Claims**

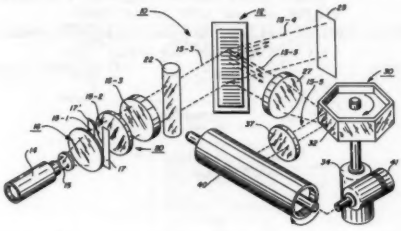
1. In an electro-optic printer combining high speed and high resolution including means for generating a beam of high intensity light and a recording member for recording images thereon, the improvement comprising:

(a) modulator means;

(b) optical means for transforming said beam into a relatively wide sheet of light impinging across said modulator means;

said modulator means modulating said sheet of light into a plurality of parallel beams for exposing multiple image lines at once on said recording member in response to a number of plural individual image signal inputs, each of said image signal inputs representing a separate image line, said modulator means having plural light valves arranged in a row and forming a plurality of discrete modulating sections, there being at least one light valve in each modulating section;

the width of said sheet of light being sufficient to impinge across all of said row of light valves at once,



the plane of said sheet of light being substantially parallel to the longitudinal axis of aid row of light valves;

(c) control means for operating the light valves of each modulating section individually in response to the image signal input associated with the modulating section to output a plurality of parallel exposure beams equal in number to said modulating sections; and

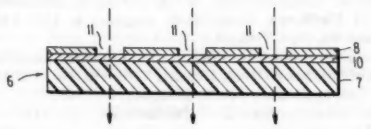
(d) means to simultaneously scan said plural exposure beams across said recording member and thereby write plural image lines on said recording member at once.

4,554,562

SCRATCH RESISTANT RECORDING MATERIALS FOR ELECTROEROSION PRINTING NOT REQUIRING A LUBRICANT OVERCOAT

Ali Afzali-Ardakani, Katonah; Mitchell S. Cohen, Ossining; Keith S. Pennington, Somers, and Krishna G. Sachdev, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1983, Ser. No. 567,297
Int. Cl.[4] G01D *15/34;* **B05D** *5/12;* **B32B** *7/00*
U.S. Cl. 346—135.1 **61 Claims**



61. An electroerosion recording material comprising, in combination,

a thin conductive layer which is erodable when contacted by a plurality of styli through which electrical signals pass during electroerosion recording,

a support layer, and

an intermediate layer located between said support layer and said thin conductive layer, said intermediate layer including a hard polymer and a particulate material, and further including 'Teflon' in an amount less than 5%, by weight, of said intermediate layer.

4,554,563

DRIVE SYSTEM IN A MULTI-PIN-ELECTRODE ELECTROSTATIC RECORDING APPARATUS

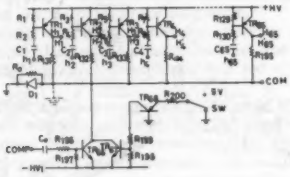
Fumikazu Nagano, Yamatokoriyama, and Hiroshi Shirakoshi, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 200,135, Oct. 24, 1980, abandoned. This application Sep. 13, 1983, Ser. No. 531,587

Claims priority, application Japan, Oct. 25, 1979, 54-138517

Int. Cl.[4] G01D *15/06*

U.S. Cl. 346—154 **3 Claims**



1. Means for driving a multi-pin-electrode recording head of an electrostatic recording system, said recording head including a plurality of pin electrodes and auxiliary electrodes positioned adjacent said pin electrodes, said means for driving comprising:

first means for applying a select voltage of a first polarity to a selected said pin electrode;

second means for applying an enable voltage having a polarity opposite said first polarity to said auxiliary electrode adjacent said selected pin electrode to produce a net voltage therebetween sufficient to form an electrostatic image on a dielectric layer of recording paper; and

third means for applying a compensation voltage to each of said auxiliary electrodes, said compensation voltage having said first polarity and being of sufficient magnitude to prevent the undesired formation of an electrostatic ghost image at undesired points.

4,554,564

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING SAME, AS WELL AS A PICK-UP DEVICE AND A DISPLAY DEVICE HAVING SUCH A SEMICONDUCTOR DEVICE

Gerardus G. P. van Gorkom, and Arthur M. E. Hoeberechts, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

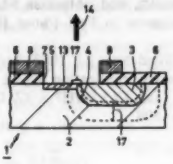
Continuation of Ser. No. 170,363, Jul. 21, 1980, which is a division of Ser. No. 971,767, Dec. 21, 1978, Pat. No. 4,259,678. This application Feb. 5, 1982, Ser. No. 345,994

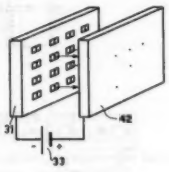
Claims priority, application Netherlands, Jan. 27, 1978, 7800987

Int. Cl.[4] G01D *15/06*

U.S. Cl. 346—161 **7 Claims**

1. A method of displaying a pattern on a photoresist layer using electron lithography comprising the steps of generating an electron pattern from a matrix of cathodes formed in a semiconductor device comprising a silicon slice covered by a photoresist layer by applying control signals to selected ones of said cathodes to cause electron emission, and exposing said photoresist layer with said electron pattern, wherein each cathode of said matrix has two connection electrodes and an accelerating electrode, and wherein said cathodes providing electron emission are selected by applying a potential to their connection electrodes for generating electrons from each of said selected cathodes as an electron beam having an intensity





dependent on a potential applied to said accelerating electrode of that cathode.

4,554,565

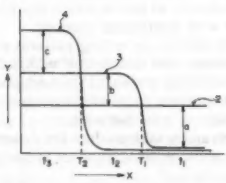
METHOD OF PRODUCING REVERSIBLE THERMOCHROMIC DISPLAY

Tutomu Kito, Gifu; Norikazu Nakasuji, Aichi; Takashi Kataoka, Aichi; Hiroshi Inagaki, Aichi, and Yutaka Shibahashi, Aichi, all of Japan, assignors to Pilot Ink Co., Ltd., Aichi, Japan

Filed Apr. 6, 1984, Ser. No. 597,292

Int. Cl.[4] B41M *5/18*

U.S. Cl. 346—201 **3 Claims**



1. In a method for forming a reversible thermochromic display, the improvement comprising: forming a plurality of overlapping colored image layers on a support, at least one of said layers providing reversible thermochromic image, said layers being so arranged to provide images having different visual densities, and the image on one of said layers being visible at any particular temperature range, and upon temperature change, the image on any reversible thermochromic layer becoming paler or darker than the densities of other images to develop an image more discernible from said already visible image.

4,554,566

HEAT-SENSITIVE RECORDING MATERIAL

Junichi Yoneda, and Akira Igarashi, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 21, 1984, Ser. No. 653,108

Claims priority, application Japan, Sep. 21, 1983, 58-174977; Sep. 21, 1983, 58-174978; Sep. 28, 1983, 58-179782

Int. Cl.[4] B41M *5/18*

U.S. Cl. 346—207 **8 Claims**

1. A heat-sensitive recording material comprising a heat-sen-

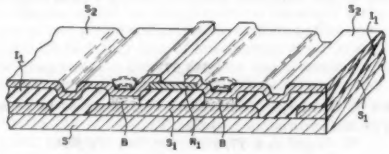
sitive recording layer containing an electron-donating colorless dye and an electron-accepting compound, said heat-sensitive layer being provided on a support base, and said heat-sensitive layer containing from 5 to 50% by weight, based on the total weight of the heat-sensitive layer-constituting component, of polymer particles having an average particles size of from 0.03 to 16 microns, selected from the group consisting of ethylene-α-olefin copolymer particles, low density polyethylene particles, and ethylene-vinyl acetate copolymer particles.

4,554,567

SUPERCONDUCTIVE INTEGRATED CIRCUIT INCORPORATING A MAGNETICALLY CONTROLLED INTERFEROMETER

Don W. Jillie, Arlington, and Lawrence N. Smith, Lexington, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Mar. 21, 1983, Ser. No. 477,278
The portion of the term of this patent subsequent to Feb. 7, 2001, has been disclaimed.
Int. Cl.⁴ H01L *39/22*
U.S. Cl. 357—5 **20 Claims**



1. A superconductive logic device comprising:
(a) a first layer of superconductive material, including at least one inductive loop of superconductive material for magnetic control and a ground plane, said loop and said ground plane coplanar with said first layer,
(b) a barrier layer overlaying said first layer,
(c) a second layer of superconductive material, superposed on said barrier layer such that at least two superconductive junctions are formed by said first and second superconductive layers and said barrier layer, whereby tunneling currents can flow therethrough between said superconductive layers, and
(d) a third layer of superconductive material including at least one inductive loop of superconductive material superposed with respect to said first and second superconductive layers with insulating means therebetween, conductively coupled to said two superconductive junctions, and responsive to inductive coupling from said inductive loop for magnetic control for biasing said superconductive junctions thereby interrupting at least a portion of said tunneling currents when a predetermined current is applied to said inductive loop for magnetic control.

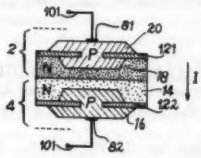
12. A superconductive logic device comprising:
(a) a first layer of superconductive material, including at least one inductive loop of superconductive material for magnetic control and a ground plane, said loop and said ground plane coplanar with said first layer,
(b) a layer of insulating material overlaying said first layer, having openings therethrough defining a plurality of superconductive junctions,
(c) a barrier layer overlaying said openings
(d) a second layer of superconductive material, superposed on said barrier layer, such that at least two superconductive junctins are formed by said first and second superconductive layers and said barrier layer, whereby tunneling currents can flow therethrough between said superconductive layers,
said second layer of superconductive material defining at least one inductive loop superposed with respect to said first superconductive layer, and responsive to inductive coupling from said loop for magnetic control for biasing said at least two superconductive junctions, thereby interrupting said tunneling currents when a predetermined current is applied to said inductive loop for magnetic control.

4,554,568

TEMPERATURE-COMPENSATED ZENER DIODE

Jacques Champon, Creteil; Bruno Maurice, Eguilles, and Michel Rouméguere, Gif sur Yvette, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 24, 1982, Ser. No. 391,919
Claims priority, application France, Jun. 30, 1981, 81 12846
Int. Cl.⁴ H01L *29/90*
U.S. Cl. 357—13 **5 Claims**



1. A temperature compensated Zener diode comprising:
a first pn junction;
a second pn junction distinct from said first junction wherein said first junction is joined to said second junction in such a way that said first pn junction can be forward-biased while said second pn junction is reverse-biased, and wherein
said first junction has a first p-type silicon layer containing no diffused metal impurities and wherein said first p-type silicon layer is deposed on a first n silicon substrate wherein said first n silicon substrate has a first doping and wherein said first silicon substrate contains diffused metallic impurities, and wherein
said second junction has a second p-type silicon layer deposed on a second n silicon substrate with said second n silicon substrate having a second doping distinct from said first doping and said second n silicon substrate contains no metallic impurities, and wherein said first and second substrates are in contact with each other and wherein a precise discontinuity in the structure of the Zener diode is formed by said contact between said first and second substrates.

4,554,569

INTEGRATED ELECTRON CIRCUITS HAVING SCHOTTKY FIELD EFFECT TRANSISTORS OF P- AND N-TYPE

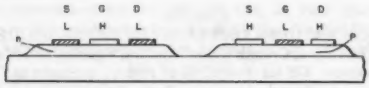
Per-Arne Tove, Malma Ringväg 36, S-752 46 Uppsala; Kjell Bohlin, Fänkålsgatan 23, S-754 47 Uppsala; Lars Stolt, Flogstavägen 59E, S-752 63 Uppsala, and Herman Norde, Studentvägen 22, S-752 34 Uppsala, all of Sweden

PCT No. PCT/SE82/00093, § 371 Date Nov. 3, 1982, § 102(e) Date Nov. 3, 1982, PCT Pub. No. WO82/03498, PCT Pub. Date Oct. 14, 1982
PCT Filed Mar. 29, 1982, Ser. No. 441,530
Claims priority, application Sweden, Mar. 27, 1981, 8101994
Int. Cl.⁴ H01L *29/48, 29/80, 27/02, 29/56*
U.S. Cl. 357—15 **18 Claims**

1. Integrated electronic circuit comprising Schottky field effect transistors of both p- and n-type, the contact elements to the transistors comprising two conductor types, the first of which has a low Schottky barrier to n-type material and makes contact with source and drain of n-transistors and gate of p-transistors, and the second of which has a high Schottky barrier to n-type material and makes contact with source and drain of p-transistors and gate of n-transistors.

2. The circuit of claim 1 wherein said two conductor types comprise metals or materials with metallic conductivity.

3. The circuit of claim 1 or 2 wherein the second conductor comprises material selected from the group consisting of Ir, Pt,



Os, Mo, silicides, conducting plastics, Au, Bi, Sb, Ag or $(SN)_x$-polymers.

6. The circuit of claim 3 wherein the first conductor comprises material selected from the group consisting of Tb, Er, Yb, Y, Mn, Hf, Al, silicides, conducting plastics, Ca, Mg or W.

4,554,570

VERTICALLY INTEGRATED IGFET DEVICE

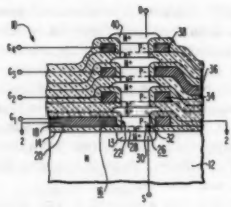
Lubomir L. Jastrzebski, Plainsboro, and Alfred C. Ipri, Princeton, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jun. 2, 1983, Ser. No. 500,399

Claims priority, application United Kingdom, Jun. 24, 1982, 8218286

Int. Cl.[4] H01L *29/78, 27/01, 29/06, 27/12*

U.S. Cl. 357—23.4 **9 Claims**



1. An integrated device incorporating a plurality of interconnected vertical IGFETs on a substrate surface, comprising:

a monocrystalline silicon region extending from an area of the substrate surface; and

a plurality of insulated gate electrodes which are disposed in an overlying and substantially coincident relationship with respect to each other and which can be selectively biased, each of said insulated gate electrodes being contiguous with a segment of the monocrystalline silicon region such that a predetermined voltage applied to a particular electrode creates an inversion channel in the segment of the monocrystalline silicon region contiguous therewith each of said inversion channels having a length which is perpendicular to the substrate surface.

4,554,571

MATCHED PHOTONIC DETECTOR-CHARGE TRANSFER READER ASSEMBLY AND IMAGE FORMING TARGET USING SUCH AN ASSEMBLY

Marc Arques, Paris, France, assignor to Thomson-CSF, Paris, France

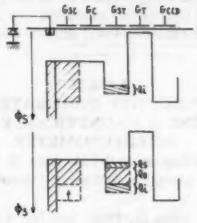
Filed Jun. 17, 1982, Ser. No. 389,288

Claims priority, application France, Jun. 23, 1981, 81 12296

Int. Cl.[4] H01L *29/78, 27/14, 31/00;* **G11C** *19/28*

U.S. Cl. 357—24 **5 Claims**

1. In a photon detector-charge transfer readout device assembly comprising at least one photon detector exposed to incident radiation and a readout device for reading a signal from this detector, transfer charges created in the readout device being of the same sign to those of the signal of the detector, detector and said readout device being connected together by way of a MOS field effect transister having a source, an auxiliary electrode, a control gate, a drain-forming electrode and a transfer gate, said MOS transistor being integrated with the readout device, the signals from the detector being transmitted to the readout device by sequential switch-



ing of the potentials of the electrodes of the transister, said auxiliary electrode being adjacent the source for accumulating thereunder in said substrate during operation a fixed reserve charge, and means for applying a steadily decreasing potential in time to this additional electrode during a switching cycle.

4,554,572

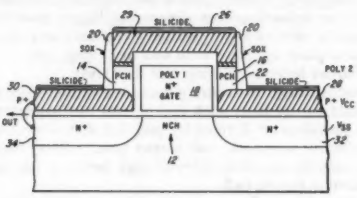
SELF-ALIGNED STACKED CMOS

Pallab K. Chatterjee, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 17, 1983, Ser. No. 505,534

Int. Cl.[4] H01L *27/02*

U.S. Cl. 357—42 **20 Claims**



1. An integrated circuit structure comprising:

(a) a substrate transistor formed at the surface of a semiconductor substrate, said substrate transistor having source and drain regions of a first conductivity type and a channel region interposed therebetween;

(b) an insulated gate electrode above said channel region of said substrate transistor, said insulted gate electrode having sidewalls substantially normal to said surface of said substrate: and

(c) a thin polysilicon layer extending continuously from atop the source of said substrate transistor, over a first sidewall of said gate electrode, over the top surface of said gate electrode, over a second sidewall of said gate electrode, and over the drain of said substrate transistor;

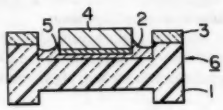
(d) said thin polysilicon layer comprising channel portions having a dopant concentration of less than 10^{18} and being disposed adjacent to and along the sidewalls of said gate electrode, said channel portions of said thin polysilicon layer being separated from said gate electrode by an insulator thickness of less than 500 angstroms;

(e) said channel portions of said thin polysilicon layer having doping levels which are less than the dopant concentration of the remainder of said thin polysilicon layer by at least an order of magnitude, said remainder of said thin polysilicon layer being doped with a second conductivity type.

4,554,573
GLASS-SEALED CERAMIC PACKAGE TYPE SEMICONDUCTOR DEVICE

Hideharu Yamamoto, Tokyo, and Hiroshi Tsuneno, Sayama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 306,863, Sep. 29, 1981, Pat. No. 4,437,228. This application Dec. 20, 1983, Ser. No. 563,617
Claims priority, application Japan, Oct. 1, 1980, 55-135869
Int. Cl.[4] H01L *21/58, 21/52, 23/08, 23/54*
U.S. Cl. 357—73 9 Claims

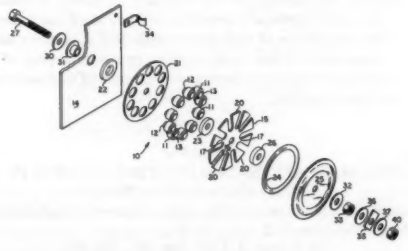


1. A semiconductor device, comprising:
a ceramic substrate having a flat surface;
a glass film of low melting point bonded to said flat surface of said ceramic substrate;
a silicon pellet having an upper surface and a lower surface; and
an adhesion reinforcing film formed on the lower surface of said silicon pellet, said adhesion reinforcing film cooperating with said glass film of low melting point to exhibit a bonding strength greater than the one produced through cooperation of silicon material of said silicon pellet and said glass film of low melting point, said adhesion reinforcing film adhering to said glass film of the low melting point, to thereby increase adhesion between the silicon pellet and the glass film as compared with the adhesion between the silicon pellet and glass film obtained without use of the adhesion reinforcing film, whereby delamination of the silicon pellet from the glass film and consequent cracking of the silicon pellet is prevented.

4,554,574
RECTIFIER ASSEMBLY FOR PARALLEL CONNECTION OF DIODES

Bruce R. Wright, St. Louis, Mo., assignor to Associated Equipment Corporation, St. Louis, Mo.

Continuation of Ser. No. 519,896, Aug. 4, 1983, abandoned, which is a continuation of Ser. No. 222,326, Jan. 5, 1981, abandoned. This application May 17, 1985, Ser. No. 735,708
Int. Cl.[4] H01L *25/04, 23/34, 21/603, 21/326*
U.S. Cl. 357—74 4 Claims

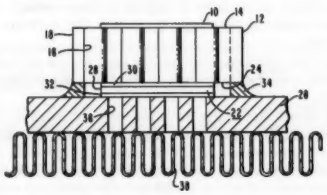


1. A diode rectifier assembly comprising:
a plurality of diodes, each diode having anode and cathode sides,
a first means electrically connecting one of the anode and cathode sides of each of said diodes to one another,
a second means electrically connecting the other of said anode and cathode sides of each of said diodes to one another, said second means including:
a common conduction area defining a central electronically conductive area, a plurality of links extending radially from the common conduction area, each link having a predetermined area for regulating current flow through said predetermined area, said predetermined area delimiting a fuse which opens under predetermined conditions so as to disconnect an individual one of said plurality of diodes from said central conduction area, thereby permitting said rectifier assembly to operate even with failure of individual ones of said diode plurality, and a plurality of diode contact areas peripherally spaced about the common conduction area, each diode contact area engaging one of said anode and cathode sides of said diodes, each link interconnecting one of the diode contact areas and the common conduction area, said second electrically connecting means
being integrally formed from a single material sheet, and
pressure means engaging and applying pressure to the diode contact areas of said second electrically connecting means for holding the diode contact areas against one of said anode and cathode sides of said diodes and holding the other of said anode and cathode sides of said diodes against said first electrically connecting means, said pressure means maintaining mechanical and electrical contact between the anode and cathode sides of said diodes and respective ones of said first and said second electrically connecting means, and wherein
each diode area is thermally conductive for providing thermal conduction from its associated diode to its associated link,
the links have a positive coefficient of resistance, and
the links have a cross-section providing greater electrical resistance than the contact areas.

4,554,575
LOW STRESS LEADLESS CHIP CARRIER AND METHOD OF ASSEMBLY

Michael R. Lucas, Arbutus, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 12, 1983, Ser. No. 493,903
Int. Cl.[4] H01L *23/14, 23/10, 23/34*
U.S. Cl. 357—80 3 Claims



1. An integrated circuit chip carrier for mounting and electrically connecting the integrated circuit chip to a printed circuit board conductor pattern, which carrier comprises a leadless carrier member having a conductive path disposed on a top surface with the integrated circuit chip mounted on this top surface with chip contacts electrically connected to the conductive path, and wherein a plurality of castellations are provided in the perimeter walls of the carrier with reflowed solder conductor means extending along the castellated perimeter wall portions and electrically connecting the carrier top surface conductive path with the printed circuit board conductor pattern and a spacer member is disposed between the under surface of the leadless carrier member and the printed circuit board, which spacer member comprises a high thermal conductivity planar metal portion sandwiched between adhesive insulating layers on either side of the planar metal portion which spacer member is about 0.015 inch thick, with solder connections extending between the printed circuit board and the carrier castellations, with the thermal expansion coefficient

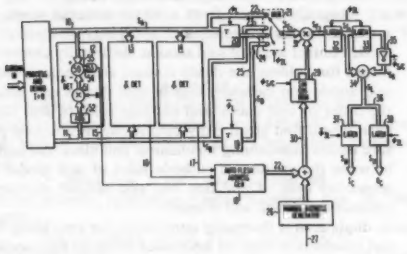
for the spacer matched to that of the solder and the thickness of the spacer member defining a solder connection height providing a low stress solder connection.

4,554,576

AUTO FLESH CIRCUITRY AS FOR A DIGITAL TV RECEIVER

Yih-Sien Kao, Gaithersburg, Md., assignor to RCA Corporation, Princeton, N.J.

Filed Apr. 21, 1983, Ser. No. 487,084
Int. Cl.[4] H04N 9/535
U.S. Cl. 358—28 **14 Claims**



1. In a television receiver including a source of quadrature sampled data PCM color mixture signals A1 and A2, apparatus for performing tint control by rotating the axes of the color mixture signals comprising:

means for generating address codes corresponding to the angle by which said axes are to be rotated;

means for generating clock signals in synchronism with the A1 and A2 signal samples;

means including a multiplier circuit comprising a first input port coupled to said source for applying a sequence of alternating A1 and A2 samples, a second input port for applying a multiplier signal, and an output port;

means responsive to said address codes and coupled to said clock signal generating means for alternately generating at an output port thereof, signals corresponding to the sine and cosine of the angle by which the axes are to be rotated;

means for coupling said output port of the sine and cosine signal generating means to said second multiplier input port;

delay means including an input port coupled to the multiplier circuit output port, and an output port; and

means including an ADDER circuit coupled to said clock generating means and including first and second input ports respectively coupled to said input and output ports of said delay means, for sequentially producing the sums of successive output signals from said multiplier circuit means.

4,554,577

KEYED DC STABILIZATION SYSTEM WITH PROTECTION FROM ERROR INTRODUCTION DURING VERTICAL SYNC INTERVAL

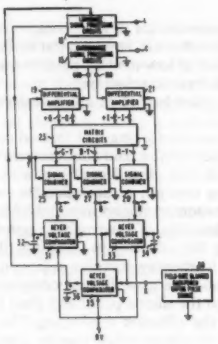
Robert L. Shanley, II; Thomas D. Yost, and William A. Lagoni, all of Indianapolis, Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 14, 1983, Ser. No. 561,280
Int. Cl.[4] H04N 5/68
U.S. Cl. 358—34 **7 Claims**

1. In a color television receiver for displaying color images in response to composite video signals inclusive of respective image-representative luminance and chrominance signal components and line-rate and field-rate deflection synchronizing components, said image-representative components being absent during a vertical blanking portion of each field interval and during horizontal blanking portions of line intervals lying outside of said vertical blanking portions, said field rate deflection synchronizing component appearing during a succession of line intervals within each of said vertical blanking portions; said receiver including a luminance signal channel for processing said luminance signal component, a chrominance signal channel for processing said chrominance signal component and recovering therefrom first and second color-difference signals, and signal combining means responsive to said first and second color-difference signals and said processed luminance signal components for forming first, second and third color signals; a DC stabilization system comprising:

a source of line rate keying pulses;

a first control loop for controlling the DC level of said first color signal formed by said signal combining means;



a second control loop for controlling the DC level of said second color signal formed by said signal combining means; and

a third control loop for controlling the DC level of said third color signal formed by said signal combining means;

wherein each of said control loops includes a keyed voltage comparator for comparing a respectively different one of said color signals with a common reference voltage during recurring keying periods defined by the line rate keying pulses provided by said source; and

wherein said source of line rate keying pulses is rendered responsive to field rate pulses indicative of the timing of the appearance of said field rate deflection synchronizing component in such manner as to preclude keying of said voltage comparator during at least some of said succession of line intervals.

4,554,578

ERROR COMPENSATED CONTROL SYSTEM IN A VIDEO SIGNAL PROCESSOR

Donald H. Willis, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Mar. 2, 1984, Ser. No. 585,388
Int. Cl.[4] H04N 9/20, 5/68, 9/16, 9/535
U.S. Cl. 358—65 **7 Claims**

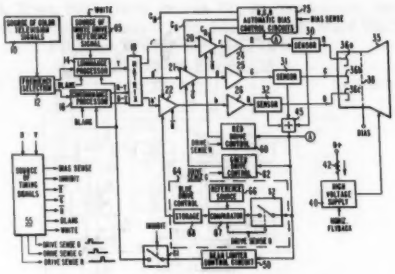
7. In a system including a video channel comprising luminance and chrominance channels for processing a video signal containing image intervals and image blanking intervals, and an image display device responsive to video signals coupled thereto via said video channel; apparatus comprising:

automatic drive control means coupled to said video channel for monitoring the conduction of said image display device during prescribed drive control intervals within

image blanking intervals, to maintain a desired drive characteristic for said video channel;

automatic bias control means coupled to said video channel for monitoring the conduction of said image display device during prescribed bias control intervals within image blanking intervals, to maintain a desired bias characteristic for said video channel;

means for automatically limiting excessive beam currents



conducted by said image display device in response to video signal image information, said limiting means providing an output beam current limiting control signal; and

means for rendering said video channel responsive to said control signal during said image intervals; for rendering at least said chrominance channel responsive to said control signal during said bias control intervals; and for rendering at least said luminance channel non-responsive to said control signal during said drive control intervals.

4,554,579

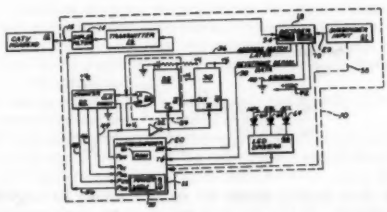
TWO-WAY CATV SYSTEM WITH AML COMMANDS

Richard W. Citta, Oak Park, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 560,029, Dec. 9, 1983, abandoned. This application Sep. 6, 1984, Ser. No. 648,841

Int. Cl.[4] H04N *7/10, 7/14, 7/16*

U.S. Cl. 358—86 **9 Claims**



1. In a two-way CATV system wherein video program signals are transmitted downstream from a headend to a plurality of subscriber terminals each uniquely identified by a respective stored multibit subscriber address code and wherein a plurality of multibit subscriber address codes may be selectively transmitted during a vertical blanking interval of said video program signals, a system for controlling a selected subscriber terminal from said headend comprising:

means associated with said headend for transmitting a multibit command code during the VBI of a selected field of said program signal for controlling said selected subscriber terminal, each bit of said command code being represented by the transmission or non-transmission during a respective time interval of the address code corresponding to the stored address code identifying said selected subscriber terminal;

means coupled to said cable for receiving the transmitted command code and for generating a match signal in response to each received address code that corresponds to the stored address code identifying said selected subscriber terminal; and

means for decoding the match signals generated during each vertical blanking interval for selectively controlling said selected subscriber terminal.

4,554,580

IMAGE INFORMATION OUTPUT APPARATUS

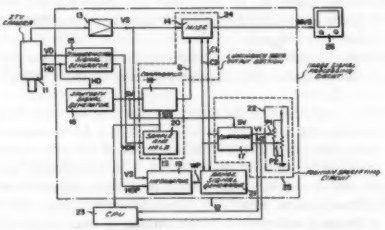
Masakazu Hayashi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 10, 1983, Ser. No. 503,252

Claims priority, application Japan, Jun. 18, 1982, 57-150115

Int. Cl.[4] H04N *7/18*

U.S. Cl. 358—107 **5 Claims**



1. An image information output apparatus, comprising:

synchronizing signal generator means for generating horizontal and vertical synchronizing signals;

image pickup means, responsive to said synchronizing signals, for generating an image signal corresponding to an object image;

sawtooth signal generator means for generating a sawtooth signal in synchronization with said horizontal synchronizing signal;

cursor line means for superposing at least two vertical lines on said object image so as to be included in said image signal, and having means for outputting cursor voltages and for producing cursor signals in cooperation with said sawtooth signal, which cursor signals correspond to said vertical lines;

integrating means for integrating components of said image signal corresponding to a region between said two vertical lines, and for outputting an integration signal indicative thereof;

image signal output means for converting said integration signal into a brightness signal in comparison with the level of said sawtooth signal;

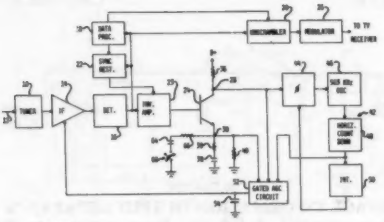
mixer means for mixing said brightness signal with said image signal; and

display means for displaying cursor vertical lines based on said cursor signals, a detection vertical line based on said brightness signal and said object image based on said image signal.

4,554,581
STV DECODER WITH IMPROVED DATA SIGNAL RECOGNITION CAPABILITY

Michael Tentler, Wheeling; David L. Walker, Arlington Hts.; Wayne E. Bretl, Schaumburg, and Gregory A. Williams, Elk Grove Village, all of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Continuation of Ser. No. 450,817, Dec. 20, 1982, abandoned.
This application Feb. 14, 1985, Ser. No. 701,713
Int. Cl.[4] H04N 7/16, 5/52
U.S. Cl. 358—120 **12 Claims**



1. In a subscription television system wherein there is transmitted from a head-end facility a scrambled television signal including fields of video characterized by suppressed horizontal sync pulses and vertical intervals characterized by encoded data signals and non-suppressed sync pulses, an improved addressable decoder comprising:

means including an IF amplifier for receiving and converting the transmitted television signal to a composite baseband video signal;

means responsive to the composite baseband video signal for processing the data signals encoded in the vertical intervals thereof;

means responsive to the composite baseband video signal for developing an AGC voltage having a level substantially corresponding to the sync tip level of the non-suppressed sync pulses during the vertical intervals thereof and decaying during the video fields between successive vertical intervals at a relatively slow rate such that the AGC voltage developed at the beginning of each vertical interval is relatively close to the sync tip level of the non-suppressed sync pulses thereof; and

means for coupling the AGC voltage for controlling the gain of the IF amplifier, whereby the sync pulses characterizing the vertical intervals of the composite baseband video signal are not subjected to excessive IF gain for facilitating processing of the data signals by the data processing means.

4,554,582
APPARATUS FOR SYNCHRONIZING A SOURCE OF COMPUTER CONTROLLED VIDEO TO ANOTHER VIDEO SOURCE

Charles M. Wine, Mercer, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 31, 1983, Ser. No. 528,229
Int. Cl.[4] H04N 5/04
U.S. Cl. 358—149 **14 Claims**

1. A video synchronizer for synchronizing a first source of computer controlled video signal to a second source of video signal, comprising:

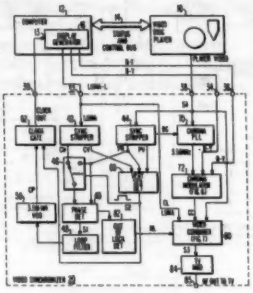
(a) input means for connection to said sources for receiving said video signals;

(b) output means for connection to said first source for supplying clock pulses thereto;

(c) phase detector means coupled to said input means for receiving horizontal synchronizing components of said video signals and developing an error signal;

(d) controlled oscillator means coupled to said output means for supplying said clock pulses thereto and responsive to said error signal for varying the clock pulse rate to synchronize the horizontal synchronizing components of said video signals;

(e) sequence detector means coupled to said input means for producing a control signal having a duration substantially equal to the duration of an integer multiple of one horizontal line when the vertical synchronizing component of said first source leads the vertical synchronizing component of said second video source; and

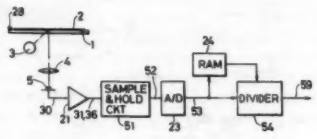


(f) clock gating means responsive to said control signal for effectively interrupting a predetermined number of cycles of said clock pulses when said control signal is present, the number of interrupted clock pulses being substantially independent of said integer multiple and the sum of the time durations of the interrupted clock cycles being substantially equal to the duration of one horizontal line for synchronizing the vertical synchronizing component of said first source to that of said second source.

4,554,583
SHADING CORRECTION DEVICE

Hiroyuki Saitoh, and Masami Kurata, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 8, 1983, Ser. No. 483,310
Claims priority, application Japan, Apr. 9, 1982, 57-58028
Int. Cl.[4] H04N 5/14
U.S. Cl. 358—163 **9 Claims**



1. In a reading device for raster scanning an original disposed on a platen which is illuminated by a light source, a conversion correcting device comprising:

an A/D converter for converting a first analog picture signal representing a reference line scanned by said reading device into a first reference digital picture signal;

memory means for storing said first digital picture signal;

said A/D converter including a plurality of comparison means for comparing an analog picture signal applied thereto to a plurality of threshold levels, and a threshold circuit means responsive to a peak value of said first analog picture signal for generating said plurality of threshold levels;

means for applying a second analog picture signal, produced during the scanning of said original, and said threshold levels to said plurality of comparison means; and

switching means for switching between said plurality of

comparison means, said switching means receiving said first digital picture signal from said memory means in synchronism with said scanning of said original and switching between said comparison means as a function of said first digital picture signal, said switching means outputting a corrected digital picture signal.

4,554,584

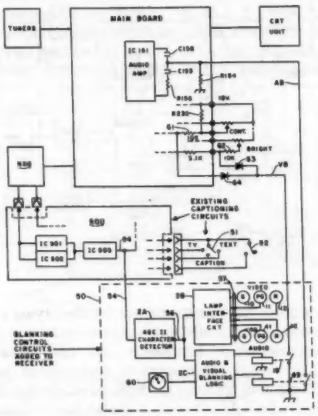
VIDEO AND AUDIO BLANKING SYSTEM

Carl M. Elam, 8018 Carey Branch Pl., Ft. Washington, Md. 20744, and Dale A. Leavy, 7 B St., Edwards AFB, Calif. 93523

Filed Jul. 8, 1983, Ser. No. 512,063

Int. Cl.[4] H04N *3/24, 7/04*

U.S. Cl. 358—165 **14 Claims**



1. A television editing system activated by transmitted digital codes for blanking at least part of the output of a receiver, in which the receiver includes at least a portion of a captioning circuit means for detecting digital data if present in the transmitted signal and supplying the data to a data bus;

wherein said editing system comprises an auxiliary circuit which includes a character detector, rating select switch means, and blanking logic means;

the character detector having inputs coupled to said data bus, means for decoding predetermined digital codes of a special set of characters, and output to rating signal lines, there being a separate rating signal line for each character of said special set;

the rating select switch means having settings for different ratings; and

the blanking logic means having logic circuits coupled to the rating signal lines and to the rating select switch means to compare the switch setting to signals on the rating signal lines, and in response to the comparison to generate a logic output signal condition for selectively either blanking or not blanking at least part of the receiver output.

4,554,585

SPATIAL PREFILTER FOR VARIABLE-RESOLUTION SAMPLED IMAGING SYSTEMS

Curtis R. Carlson, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 12, 1983, Ser. No. 522,692

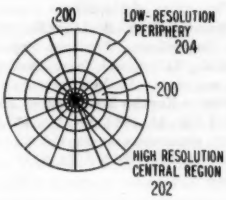
Int. Cl.[4] H04N *5/30*

U.S. Cl. 358—209 **6 Claims**

1. In an imaging system, the combination comprising:

an imager having a spatial distribution pattern of discrete picture elements for detecting a light image projected thereon, wherein the respective sizes of said discrete picture elements in said pattern in at least one given dimension vary continually from relatively the smallest in a first region of said pattern to relatively the largest in a second region of said pattern spaced from said first region thereof, thereby to derive a corresponding spatial pattern of image samples having relatively high spatial resolution in said first region, relatively low spatial resolution in said second region and a spatial resolution that varies continually from high to low in regions of said spatial pattern in between first and second regions thereof; and

a spatial frequency low-pass prefilter situated in the path of said projected light image for illuminating said imager



with only the spatial frequencies of said projected image which pass through said prefilter, said prefilter being comprised of a diffusing surface in spaced relationship with respect to said pattern of picture elements of said imager with the spacing distance between said diffusing surface and each of said picture elements of said pattern increasing as a direct function of the size of that picture element, thereby to vary the spatial cutoff frequency of said prefilter in accordance with the spatial resolution of each region of image samples, whereby aliasing in the variable resolution sampled image detected by said imager is significantly reduced.

4,554,586

SOLID STATE IMAGE SENSING DEVICE

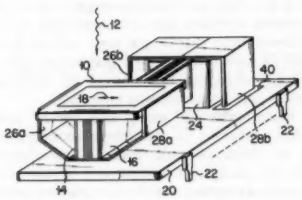
Chiaki Tanuma, Tokyo; Katsunori Yokoyama, Ebina, and Yoshiyuki Suda, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 13, 1983, Ser. No. 484,511

Claims priority, application Japan, May 12, 1982, 57-78328; May 12, 1982, 57-78331

Int. Cl.[4] H04N *3/14*

U.S. Cl. 358—213 **12 Claims**



1. An image-sensing device applied to an image pickup system in which one frame consists of a plurality of field periods comprising:

a solid state image sensor element receiving an image light to produce an electrical image pickup signal corresponding to the image light;

a base board having a top surface;

vibrating means, mechanically connected to said image sensor element, for receiving an external electrical signal and for vibrating said image sensor element on a plane substantially parallel to the top surface of said base board in response to the external electrical signal so as to cause

said image sensor element to periodically vibrate in conformity with the relative positions of said image sensor element and the image light, whereby said image sensor element periodically vibrates in such a manner as to occupy a different image pickup position during a different field period, said vibrating means comprising a piezoelectric element; and

support means, provided between said base board and said vibrating means, so as to cause said vibrating means to occupy a prescribed position above the top surface of said base board.

4,554,587

IMAGE PICKUP APPARATUS

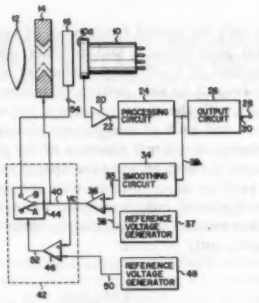
Kazushige Ooi, Sagamihara; Shigekazu Fujiwara, Kamakura; Nobuaki Yoshida, Tokyo, and Tsuneo Sukegawa, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha and Nippon Kogaku K.K., both of Tokyo, Japan

Filed Feb. 18, 1983, Ser. No. 467,884

Claims priority, application Japan, Feb. 22, 1982, 57-26937

Int. Cl.⁴ H04N *5/14, 5/19*

U.S. Cl. 358—228 **15 Claims**



1. An apparatus for picking up incident image light, comprising:

(a) an image sensing element having an image pickup surface for receiving and sensing incident image light;

(b) diaphragm means, responsive to an aperture control signal and disposed along an optical path of the image light incident on said image sensing element, for setting an aperture size from and including a first aperture size corresponding to a fully opened diaphragm state to and including a second aperture size corresponding to a predetermined lower limit diaphragm state which is no smaller than 2% of said fully opened diaphragm state, thereby controllably changing the amount of said image light incident on said image sensing element;

(c) filter means, disposed along said optical path of said image light incident on said image sensing element and having an electrochromic layer of an electrochromic material, for changing transmissivity of said electrochromic layer in accordance with said aperture control signal selectively applied thereto, thereby changing the amount of said image light incident on said image sensing element; and

(d) exposure controlling means, selectively outputting said aperture control signal to said diaphragm means and said filter means to perform an exposure control operation with respect to said image sensing element, for only controlling said diaphragm means to set aperture size thereby performing said exposure control operation when illuminance of actual incident image light is smaller than a predetermined reference illuminance, and for controlling said diaphragm means to set and hold aperture size at said second aperture size and for controlling said filter means so as to change said transmissivity and thereby perform said exposure control operation when illuminance of actual incident image light is not less than said predetermined reference illuminance.

4,554,588

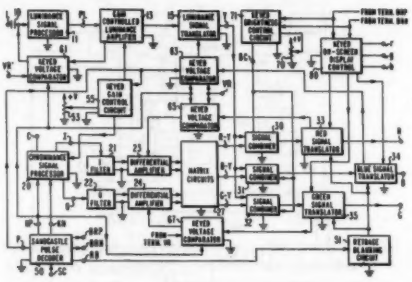
CONTROL SYSTEM FOR LUMINANCE/CHROMINANCE SIGNAL PROCESSING CIRCUITS

Robert L. Shanley, II, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 14, 1983, Ser. No. 561,176

Int. Cl.⁴ H04N *5/68, 9/16, 9/20, 3/24*

U.S. Cl. 358—243 **7 Claims**



1. In a color television receiver for displaying color images in response to composite video signals inclusive of respective image-representative luminance and chrominance components, said image-representative components being absent during horizontal blanking portions of successive line intervals within periodic field intervals, and also absent during the vertical blanking portion of each field interval, said receiver including: a color kinescope having a plurality of beam intensity control electrodes for controlling the intensity of a plurality of electron beams tracing a raster of scanning lines upon a viewing screen; means for automatically controlling the bias on the respective control electrodes during periodic bias control intervals encompassing a plurality of successive line intervals within each of said vertical blanking portions; a luminance signal channel for processing said luminance component and including a gain controlled luminance signal amplifier, and a luminance signal translator responsive to an output of said luminance signal amplifier; a chrominance signal channel for processing said chrominance component, and including means responsive to said processed chrominance signal component for developing a plurality of color-difference signal outputs; a signal combiner responsive to one of said color-difference signal outputs and to an output of said luminance signal translator for forming a first color signal; and means for applying said first color signal to one of said kinescope electrodes; control apparatus comprising:

an adjustable gain control voltage source;

keyed gain control means responsive to an output of said gain control voltage source for (1) rendering the gains of said luminance signal amplifier and said chrominance signal processor responsive to said adjustable gain control voltage during all field interval portions with the exception of said bias control intervals; and (2) substantially disabling said luminance signal amplifier and said chrominance signal processor during said bias control intervals;

a control loop for controlling the DC level of said output of said luminance signal translator, said control loop including: keyed comparator means for comparing the voltage attained by said first color signal throughout said bias control intervals with a reference voltage; and means, coupled to said luminance signal translator and responsive to the output of said keyed comparator means, for oppos-

ing departures of said attained color signal voltage from substantial equality with said reference voltage;

an adjustable brightness control voltage source; and

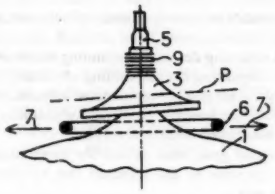
keyed brightness control means for rendering the DC level of said signal combiner output responsive to said adjustable brightness control voltage during the presence of said image-representative signal components but independent of said adjustable brightness control voltage throughout said bias control intervals.

4,554,589

PROCESS AND DEVICE ENSURING THE FIXATION ON THE NECK OF A CATHODE TUBE OF THE DEVIATION COLLAR OF THE TUBE

Ignazio Cormio, Montrouge, France, assignor to Videocolor S.A., Montrouge, France

Continuation of Ser. No. 396,330, Jul. 8, 1982, Pat. No. 4,515,568. This application Nov. 7, 1984, Ser. No. 669,001
Claims priority, application France, Jul. 9, 1981, 81 13472
Int. Cl.[4] H04N *5/645*
U.S. Cl. 358—248 **9 Claims**



1. In a cathode tube having a deflection yoke, a device for ensuring the fixation of the deflection yoke on a neck of the tube, said device comprising an adjustable fixed abutment positioned on the neck of the tube on one side of said yoke with respect to a transverse median plane, and

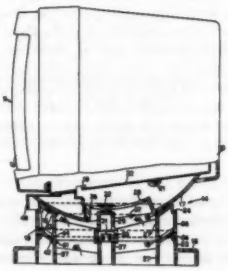
an elastic abutment freely mounted on the neck of the tube on the other side of the said yoke with respect to said transverse median plane.

4,554,590

DEVICE FOR POSITIONING VIDEO DISPLAY UNIT

Cesare Chelin, Caluso, and Vittorio Ceradelli, Cascinette d'Ivrea, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Continuation of Ser. No. 268,143, May 28, 1981, abandoned. This application Mar. 12, 1984, Ser. No. 588,513
Claims priority, application Italy, Jun. 5, 1980, 67868 A/80
Int. Cl.[4] H04N *5/655*
U.S. Cl. 358—248 **4 Claims**



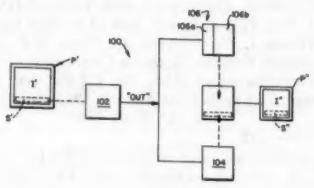
1. A device for positioning a video display unit with respect to a fixed structure wherein the video display unit is mounted on a video structure having a lower portion, said device comprising a base having a vertical projection which projects upward and includes internally a seat, a spherical surface element projecting downward from the lower portion of said video structure arranged to cooperate with said seat, a pin and slot connection between the spherical surface element and the seat for enabling the video display unit to incline with respect to said base in a vertical plane passing through the axis of the slot and to freely rotate in a horizontal plane perpendicular to the axis of the pin, wherein the section of said spherical surface element is dimensionally slightly smaller than the section of said video structure, and wherein the curvature of the spherical surface element is such that the center of gravity of the video display unit substantially coincides with the center of curvature of the spherical surface element, and mounting means for holding together the video display unit with the base and for enabling the dismantling of the video display unit from the base and the handling of the video display unit away from said base, said mounting means comprising the pin of said pin and slot connection fixed to said base, means defining a circular edge on the lower portion of the spherical surface element for supporting the video structure when the video structure is dismantled from the base, wherein said means defining a circular edge include a recessed surface which extends internally to said spherical surface and contains the slot of said pin and slot connection, and wherein said slot is recessed with respect to said circular edge, and an enlarged element at one end of said pin to avoid disengagement of the pin from the slot, means defining a widened portion at one end of the slot which allows passage of said enlarged element, and a releasable stop element for limiting the stroke of the pin along the slot preventing registration of said enlarged element with the widened portion of said slot, wherein said stop element is flexibly supported by said spherical surface element and it is forceable by said pin to cause said enlarged element to pass through said widened portion.

4,554,591

REPRODUCIBLE IMAGE AND INFORMATION BEARING RECORD

Richard C. Kee, Chestnut Hill, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 19, 1983, Ser. No. 533,425
Int. Cl.[4] H04N *1/00*
U.S. Cl. 358—256 **10 Claims**



1. A method of reproducing an original article having a visible image thereon as well as visually indiscernible machine readable information for reproducing the image, said method comprising the steps of:

reading the machine readable information of the original article and converting said information into corresponding electrical signals;

providing an information bearing medium having means for receiving and storing an electrical signal as visually indescernible machine readable information and means for receiving and supporting a visible image;

storing said electrical signals on said means for receiving and storing as visually indiscernible machine readable information; and

controlling a means for generating an image with said elec-

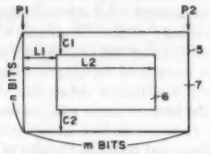
trical signals to generate an image on said means for receiving and supporting a visible image.

4,554,592

IMAGE FORMING APPARATUS

Tadashi Yoshida, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 339,282, Jan. 13, 1982, Pat. No. 4,439,790. This application Oct. 20, 1983, Ser. No. 543,907
Claims priority, application Japan, Jan. 23, 1981, 56-8614; Feb. 16, 1981, 56-21236
Int. Cl.[4] H04N 1/32
U.S. Cl. 358—257 15 Claims



1. An image reading apparatus comprising:

means for reading an original and for producing an image signal as an output, said reading means comprising at least one scanning device in relative movement relation with the original in an auxiliary scanning direction perpendicular to a main scanning direction, said scanning device being adapted to perform a scanning in the main scanning direction;

detecting means responsive to the output from said reading means for detecting the left and right edges of the original in the main scanning direction;

means for measuring the time of detection of the left and right edges of the original by said detecting means; and

means for identifying the size of the original in accordance with the measurement result of said measuring means.

4,554,593

UNIVERSAL THRESHOLDER/DISCRIMINATOR

Sidney J. Fox; Filip J. Yeskel, both of Boulder County, Colo., and William J. Zimmermann, Jr., Tioga, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 222,103, Jan. 2, 1981, abandoned. This application Aug. 18, 1982, Ser. No. 409,239
Int. Cl.[4] H04N 1/40
U.S. Cl. 358—282 27 Claims

1. A thresholding mode-switching device for automatically selecting an optimum operational mode for printing copies of documents having a mixed format, said mode-switching device comprising:

scanning means for generating a stream of pixel values representative of reflectance characteristics of a scanned document;

input buffer means for storing a predetermined number of pixel values;

look-ahead logic means coupled to said buffer means for supplying look-ahead signals based on values of pixels subsequent to said pixel of interest;

hysteresis means coupled to said buffer means for supplying hysteresis signals based on values of pixels preceding said pixel of interest; and

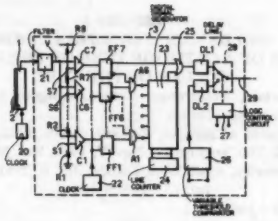
controller means responsive to said look-ahead signals, said hysteresis signals, and the stored value of said pixel of interest for selecting an optimum operational mode.

4,554,594

APPARATUS FOR SCANNING AND DIGITALLY PROCESSING HALF-TONE IMAGES

Giovanni Ciardiello, Ivrea, and Ferdinando Augusti, Turin, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Mar. 18, 1983, Ser. No. 476,559
Claims priority, application Italy, Mar. 22, 1982, 67360 A/82
Int. Cl.[4] H04N 1/40
U.S. Cl. 358—283 11 Claims



7. An apparatus for scanning and digitally processing images comprising:

an optical scanning device for scanning elements of an image and for outputting corresponding electrical image signals,

a plurality of threshold comparator circuits selectable for comparing the image signals with a plurality of reference signals associated with said circuits,

a digital-signal generator circuit for generating digital signals in response to the selected one of said comparator circuits, and

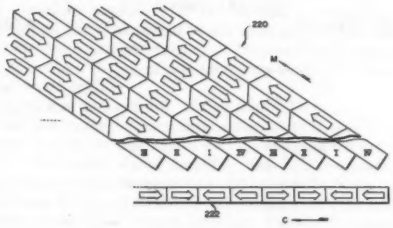
a selecting circuit for automatically selecting the comparator circuit associated with the threshold reference signal last traversed by the image signal, whereby for a reverse transition of the image signal the threshold is automatically adapted in pursuit of the same image signal.

4,554,595

VIDEO SIGNAL RECORDING/REPRODUCING APPARATUS WITH CROSSTALK AND TRACKING ERROR ELIMINATION

Shunpei Tanaka, and Kenji Kimura, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1982, Ser. No. 448,786
Claims priority, application Japan, Dec. 15, 1981, 56-201858
Int. Cl.[4] H04N 9/491
U.S. Cl. 358—328 11 Claims



1. A video signal recording apparatus with crosstalk and tracking error elimination, in which a plurality of video tracks each having a predetermined number of horizontal scanning components are formed on a recording medium adjacent to each other, comprising:

separating means for separating horizontal and vertical synchronizing signals from an input video signal having a chrominance signal;

phase controlling means coupled to receive said input video signal, and including means for periodically and sequentially changing the phase of said chrominance signal in response to said horizontal and vertical synchronizing signals, and means for periodically forming first to fourth recording patterns from said changed phase chrominance signal, said first recording pattern having odd horizontal scanning components, a phase of which is inverted, and even horizontal scanning components, a phase of which is kept noninverted, said second recording pattern having a phase noninverted, said third recording pattern having odd horizontal scanning components, a phase of which is kept noninverted, and even horizontal scanning components, a phase of which is inverted, and said fourth recording pattern having a phase which is inverted; and

means coupled to said phase controlling means for recording an output signal from said phase controlling means, such that said first to fourth recording patterns are recorded on the respective adjacent video tracks of said recording medium.

4,554,596

COLOR VIDEO SIGNAL RECORDING APPARATUS

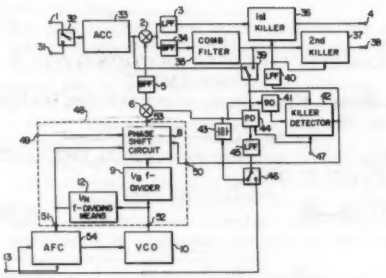
Akira Shibata, Katsuta; Noboru Kojima, Yokohama, and Tomomitsu Kuroyanagi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 1, 1982, Ser. No. 438,246

Claims priority, application Japan, Nov. 4, 1981, 56-175673; Nov. 4, 1981, 56-175677; Nov. 4, 1981, 56-175678; Mar. 12, 1982, 57-37994; Mar. 12, 1982, 57-37996; Apr. 2, 1982, 57-53820

Int. Cl.[4] **H04N** *9/493*

U.S. Cl. 358—330 **5 Claims**



1. A color video signal recording apparatus wherein a luminance signal and a chrominance signal are separated from a color video signal, said luminance signal is transformed into a frequency modulation signal, said chrominance signal is converted to have a lower frequency, and said frequency-modulated luminance signal and said frequency-converted chrominance signal are recorded on a frequency multiplex basis on a recording medium, comprising:

a frequency converter which receives said chrominance signal separated from said color video signal;

a reference oscillator for generating a reference signal;

a phase selection circuit which receives the output of said reference oscillator and shifts the phase of the output of said reference oscillator by 90° or 180° in every horizontal period;

means for supplying the output of said phase selection circuit to said frequency converter, said frequency converter being operable to mix said chrominance signal with the output of said phase selection circuit so as to convert the frequency of said chrominance signal into said lower frequency;

a control means connected to said reference oscillator and adapted to control the oscillation frequency of said reference oscillator such that the frequency of said frequency-converted chrominance signal is $\frac{1}{2}N \cdot f_H$ (where N is an integer and f_H is a horizontal scanning frequency) and at the same time N/4 is an integer in case said phase selection circuit shifts the phase of the output of said reference oscillator by 90° in every horizontal period or $(2N-2)/4$ is an integer in case said phase selection circuit shifts the phase of the output of said reference oscillator by 180° in every horizontal period; and

means connected to the output of said frequency converter and adapted to extract said frequency-converted chrominance signal which is converted into the lower frequency.

4,554,597

MEMORY UTILIZATION CONTROL SYSTEM FOR COMPRESSED DIGITAL PICTURE DATA TRANSMISSION SYSTEM

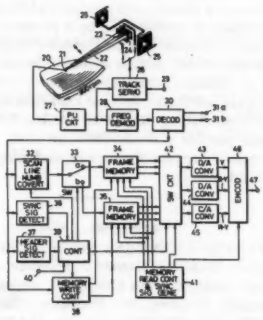
Hiroyuki Sugiyama, Isehara; Takeshi Shibamoto, Sagamihara; Hideo Sato, Yokohama; Tsuneo Furuki, Yamato; Mitsuo Kubo, Yamato, and Koji Tanaka, Tokyo, all of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Nov. 3, 1983, Ser. No. 548,415

Claims priority, application Japan, Nov. 5, 1982, 57-194066

Int. Cl.[4] **H04N** *5/76, 5/02*

U.S. Cl. 358—335 **5 Claims**



1. A write-in and read-out control apparatus for controlling write-in and read-out of picture element data with respect to a memory circuit, said memory circuit having a memory capacity capable of storing picture element data amounting to one frame and being selectively supplied with picture element data of frame-transmission and picture element data of field-transmission, said frame-transmission being a transmission of all picture element data which are related to a displaying area within a total display area of one picture, said picture element data of frame-transmission amounting to one frame or less according to the size of said displaying area with respect to said total display area, said field-transmission being a transmission of half of the picture element data which are related to the displaying area within the total display area of said one picture, said picture element data of field-transmission amounting to one field or less according to the size of said displaying area with respect to said total display area, said write-in and read-out control apparatus comprising:

input terminal means successively applied with input picture element data, said input terminal means being coupled to said memory circuit;

an address signal generating means for generating an address signal which successively indicates write-in addresses in a first memory region corresponding to one field within said memory circuit into which picture element data which are to be reproduced in a first field among said input picture element data are written, and generating an address signal which successively indicates write-in addresses in a second memory region corresponding to one field within said memory circuit into which picture element data which are

to be reproduced in a second field are written, when said picture element data of frame-transmission are successively applied to said input terminal means as said input picture element data, and for generating two address signals which respectively and successively indicate write-in addresses in the first and second memory regions into which said picture element data of field-transmission are written, when said picture element data of field-transmission are successively applied to said input terminal means as said input picture element data;

write-in pulse generating means for generating at least one write-in pulse when said picture element data of frame-transmission are successively applied to said input terminal means every time one of said input picture element data is applied to said input terminal means, to supply the generated write-in pulse to said memory circuit and write said input picture element data into said memory circuit, and for generating one or two write-in pulses when said picture element data of field-transmission are successively applied to said input terminal means every time one of said input picture element data is applied to said input terminal means, to supply the generated write-in pulse or pulses to said memory circuit and write said input picture element data into said memory circuit; and

read-out control means for generating a read-out address signal and supplying the generated read-out address signal to said memory circuit, said read-out address indicating an address which is incremented by a predetermined integer regardless of whether stored picture element data in said memory circuit are picture element data of frame-transmission or field-transmission, so that the stored picture element data are read out from said first memory region during a reproducing period of the first field and so that the stored picture element data are read out from said second memory region during a reproducing period of the second field.

4,554,598

SINGLE REVOLUTION DISK SECTOR FORMATTER

Bruce H. Tarbox, Billerica; Donald J. Rathbun, Andover, both of Mass., and Taian Su, Palo Alto, Calif., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

Filed May 25, 1984, Ser. No. 613,936

Int. Cl.[4] G11B *5/09*

U.S. Cl. 360—48 **4 Claims**

1. Apparatus for writing a predetermined format on a track of a mass storage disk drive during one revolution of the disk, said apparatus comprising:

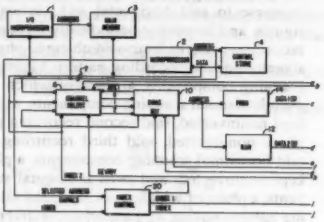
DMA controller means for storing a plurality of address signals and generating a sequence of said plurality of address signals;

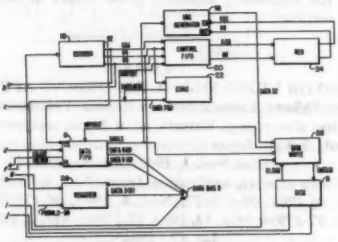
read only memory (ROM) means coupled to said DMA controller means and responsive to said sequence of said plurality of address signals for generating sequence of ROM signals representative of fixed data codes or control codes stored in first locations specified by said sequence of said plurality of address signals;

decoder means coupled to said ROM means and responsive to said sequence of ROM signals representative of said control codes for generating a sequence of control signals;

random access memory (RAM) means coupled to said ROM means and said decoder means and responsive to said sequence of said plurality of address signals for generating a sequence of RAM signals representative of variable data codes stored in second locations specified by selected ones of said sequence of said plurality of address signals;

data first in-first out (FIFO) means coupled to said DMA controller means, said decoder means, said ROM means and said RAM means and responsive to a memory write signal, a first control signal in a first state and said sequence of RAM signals for storing a sequence of variable data codes, and responsive to said memory write signal, said first control signal in a second state, a second control signal and said sequence of ROM signals for storing a sequence of fixed data codes, said FIFO means generating an output signal serializing said sequence of fixed and said





variable data codes in said predetermined format for writing on said track during said one revolution of the disk.

4,554,599

CASSETTE TAPE REPRODUCTION CONTROL ARRANGEMENT

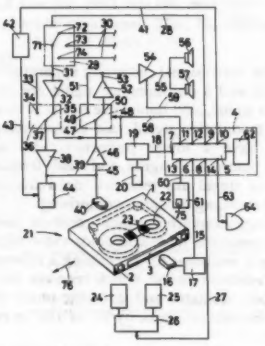
Syuji Shiozaki, Hyogo, Japan, assignor to Fujitsu Ten Limited, Kobe, Japan

Filed Jun. 21, 1983, Ser. No. 506,884

Claims priority, application Japan, Jun. 21, 1982, 57-107379; Oct. 27, 1982, 57-189929

Int. Cl.[4] G11B *5/008*

U.S. Cl. 360—69 **25 Claims**



1. A reproduction control arrangement for a cassette tape deck, in which recording and reproduction are performed by a cassette half having the magnetic tape being mounted on the deck, comprising:

a recording area having control information for record/reproduction of the magnetic tape,

said recording area being provided on the surface of the

cassette half parallel to the direction in which the cassette half is attached to or discharged from the deck,

a detecting means for detecting the recording area during the time that the cassette half is being moved on the cassette deck so as to be mounted thereon, said detecting means being positioned at a location facing a cassette half moving course so that detection occurs before completion of mounting of the cassette half on the deck, and

a processing unit for controlling reproduction of the cassette tape according to the control information recorded in the recording area.

4,554,600

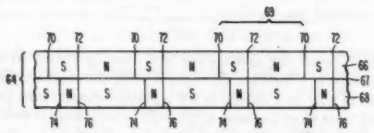
TRACK FOLLOWING CODE AND TRACK FOLLOWING SYSTEM

Graham P. Sellars, Winsford, England, assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 447,834, Dec. 8, 1982, Pat. No. 4,519,007. This application Sep. 10, 1984, Ser. No. 648,573

Int. Cl.[4] G11B *5/56*

U.S. Cl. 360—77 **29 Claims**



1. A data storage member comprising: a track; and a tracking code for positioning a transducer with respect to said track, said code including:

a first path including a first area of magnetic flux of one polarity followed by a second area of magnetic flux of opposite polarity;

a second path adjacent said first path and including a third area of magnetic flux of said opposite polarity followed by a fourth area of magnetic flux of said one polarity, wherein said second area immediately follows said first area and said fourth area immediately follows said third area in their respective paths, said first area and said third area commencing at substantially the same positions on said storage member, said second area and said fourth area commencing at substantially the same positions on said storage member; and

wherein said first path and said second path extend a distance X on said storage member, said first area and said third area each extend a distance Y, and said second area and said fourth area each extend a distance Z, where Y is less than Z and $X=Y+Z$.

4,554,601

MODE SWITCH OPERATING DEVICE FOR TAPE RECORDER

Masanori Sugihara, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

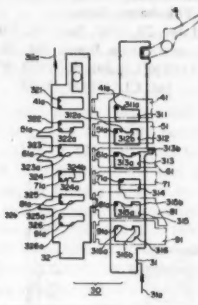
Filed Sep. 1, 1982, Ser. No. 413,660

Claims priority, application Japan, Sep. 2, 1981, 56-130471[U]; Sep. 2, 1981, 56-130474[U]; Sep. 2, 1981, 56-130475[U]; Sep. 2, 1981, 56-130476[U]; Sep. 2, 1981, 56-130477[U]

Int. Cl.[4] G11B *15/00*

U.S. Cl. 360—90 **13 Claims**

4. A mode switch operating device for a tape recorder, comprising; a plurality of mode operating levers, each being provided with a retaining pin; a retainer plate and a retainer slider, each movable in a direction perpendicular to the direction of movement of said mode operating levers, said plate and said slider being provided with window holes through which the retaining pins of said operating levers pass, said plate and said slider being biased to move in opposite directions relative to each other, at least some of said window holes of said retainer plate being provided with a retaining portion at a periphery thereof opposite to the biasing direction thereof.



4,554,602

VIDEO SIGNAL RECORDING APPARATUS

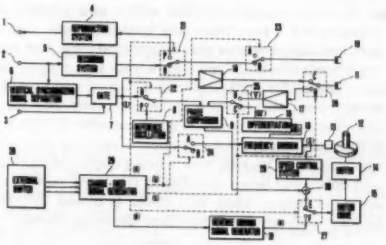
Kazumitsu Tobe, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1983, Ser. No. 467,349

Claims priority, application Japan, Mar. 3, 1982, 57-33289

Int. Cl.[4] H04N *5/78;* **G11B** *27/00*

U.S. Cl. 360—14.2 **12 Claims**



1. A video signal recording apparatus, comprising:

(a) recording means for recording a video signal on a recording medium and forming a video track;

(b) reproducing means for reproducing a control signal from a control track of the recording medium, the control signal being recorded at positions related to the video tracks;

(c) moving means for moving the recording medium;

(d) input means for inputting a video signal;

(e) separation means for separating a synchronizing signal from the input video signal;

(f) generation means for generating a timing signal in relation to a moving action of said moving means;

(g) control means for controlling said moving means, said control means including a selection circuit for selectively outputting the control signal reproduced by the reproducing means and the timing signal generated by the generation means, and a phase comparison circuit for phase comparing the synchronizing signal with the output signal of the selection circuit; and

(h) setting means for compulsorily setting a phase of the timing signal on the basis of a phase of said synchronizing signal when the selection circuit selects the control signal.

4,554,603

ADAPTER FOR A MINIATURE TYPE TAPE CASSETTE

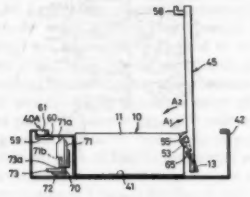
Eiichi Tsuchiya, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jul. 25, 1983, Ser. No. 516,806

Claims priority, application Japan, Jul. 30, 1982, 57-134271; Jul. 30, 1982, 57-116936[U]; Jul. 30, 1982, 57-116938[U]

Int. Cl.[4] G11B *15/66*

U.S. Cl. 360—94 **6 Claims**



1. An adapter for a miniature type tape cassette having an external form and size smaller than those of a standard type tape cassette, said miniature type tape cassette being used with a recording and/or reproducing apparatus of a type different from a standard type recording and/or reproducing apparatus primarily designed for carrying out recording and/or reproduction with said standard type tape cassette, said adapter comprising:

an adapter case having an external form and size substantially identical to those of said standard type tape cassette;

an accommodating part for accommodating said miniature type tape cassette;

a cover for covering said accommodating part in its closed state, said cover being provided in a state free to open and close;

tape draw-out means provided within said adapter case, for drawing out a tape from said miniature type tape cassette accommodated within said accommodating part and forming a predetermined tape path within said adapter case; and

locking means for engaging with a part of said tape draw-out means when said cover is in its open state, and for locking said tape draw-out means in an immovable state at a position before said tape draw-out means starts a tape draw-out operation, said locking means being displaced by one part of said cover and being disengaged from said part of said tape draw-out means when said cover is closed to release the locking with respect to said tape draw-out means.

4,554,604

VIDEO SIGNAL RECORDING AND/OR REPRODUCING APPARATUS HAVING A FUNCTION TO TEMPORARILY STOP RECORDING

Tsuneyuki Koyama, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 19, 1983, Ser. No. 496,129

Claims priority, application Japan, May 21, 1982, 57-85709; May 28, 1982, 57-90842; May 28, 1982, 57-90843; Jun. 15, 1982, 57-102900

Int. Cl.[4] G11B *5/00, 15/00*; H04N *5/76*

U.S. Cl. 360—95 **10 Claims**

1. A video signal recording and/or reproducing apparatus comprising:

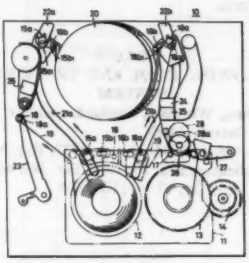
tape loading and unloading means for loading a magnetic tape along a predetermined tape path by drawing the tape outside a tape cassette which is loaded into said recording and/or reproducing apparatus when the recording and/or reproducing apparatus is set to a recording mode or a reproducing mode, and for unloading the tape from the predetermined tape path by returning the tape inside the tape cassette when the recording and/or reproducing apparatus is set to a stop mode;

a power source switch having ON and OFF states;

a power source turned ON or OFF in response to the ON or OFF state of said power source switch;

magnetic head means for recording a video signal on the tape disposed along the predetermined tape path during the recording mode and for reproducing the recorded video signal from the tape disposed along the predetermined tape path during the reproducing mode;

driving means coupled to said power source for driving the tape to move;



control means for controlling said driving means to move the tape in a forward direction during the recording mode and in a reverse direction for a predetermined time period and then stop the tape when said power source switch is turned OFF during the recording mode, said reverse direction being opposite to said forward direction; and

turning OFF means for turning OFF said power source in a state where the tape is substantially disposed along the predetermined tape path when the tape stops after moving in the reverse direction for said predetermined time period.

4,554,605

MODE SETTING DEVICE OF A MAGNETIC TAPE DRIVING APPARATUS

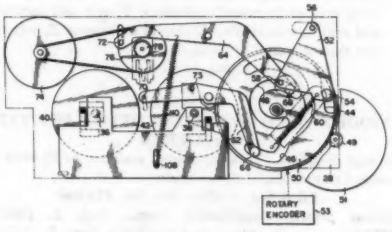
Shoichi Saito, and Kazumi Miyazi, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 16, 1982, Ser. No. 408,413

Claims priority, application Japan, Aug. 25, 1981, 56-133001; Sep. 7, 1981, 56-132763[U]

Int. Cl.[4] G11B *5/008*

U.S. Cl. 360—96.1 **4 Claims**



1. In a magnetic tape driving apparatus in which a magnetic tape (32) is driven with a reel shaft (16 or 18) and a capstan (36 or 38), a mode setting device for establishing various driving modes (i.e., EJECT. START, FF. REW, PLAY. REC, STOP, PAUSE, CUE. REVIEW) of the tape driving apparatus, comprising:

a brake lever (124 or 126) provided with a brake friction member (134 or 136) and being movable between a separating position wherein the brake friction member (134 or 136) is separted from the reel shaft (16 or 18) and a braking

position wherein the brake friction member (134 or 136) is in contact with the reel shaft (16 or 18) so as to stop the rotation of the reel shaft (16 or 18);

a pinch roller retaining lever (138 or 140) provided with a pinch roller (142 or 144) and being movable between a non-pinching position wherein the pinch roller (142 or 144) does not pinch the magnetic tape (32) in cooperation with the capstan (36, 38) and a pinching position wherein the pinch roller (142 or 144) pinches the magnetic tape (32) in cooperation with the capstan (36 or 38);

a first urging means (128) for urging the brake lever (124 or 126) toward the braking position thereof;

a second urging means (162 or 164) for urging the pinch roller retaining lever (138 or 140) toward the pinching position thereof;

a first cam guide member (62) coupled to said brake lever and to said pinch roller retaining lever, and being movable among first, second, and third positions, the first cam guide member (62) setting the brake lever (124 or 126) at the separating position when the first cam guide member (62) is located at its first position, the first cam guide member (62) setting the pinch roller retaining lever (138 or 140) at the non-pinching position when the first cam guide member (62) is located at its second position, and the first cam guide member (62) setting the brake lever (124 or 126) at the separating position and setting the pinch roller retaining lever (138 or 140) at the non-pinching position when the first cam guide member (62) is located at its third position;

a second cam guide member (64) coupled to said pinch roller retaining lever, and being movable among first, second, and third positions, the second cam guide member (64) setting the pinch roller retaining lever (138 or 140) at the non-pinching position when the second cam guide member (64) is located at its third position; and

a rotary cam member (50) being capable of attaining first through six different and discrete angular positions and being coupled to said first and second cam guide members for guiding said first and second cam guide members (62 or 64) among their respective first to third positions, the cam member (50) guiding the first cam guide member (62) at its first position and the second cam guide member (64) at its third position when the cam (50) is located at its first and second angular positions, the cam member (50) guiding the first cam guide member (62) at its second position and the second cam guide member (64) at its third position when the cam member (50) is located at its third angular position, the cam member (50) guiding the first cam guide member (62) at its third position and the second cam guide member (64) at its second position when the cam member (50) is located at its fourth angular position, the cam member (50) guiding the first cam guide member (62) at its second position and the second cam guide member (64) at its first position when the cam member (50) is located at its fifth angular position, and the cam member (50) guiding the first cam guide member (62) at its first position and the second cam guide member (64) at its first position when the cam member (50) is located at its sixth angular position, so that:

the brake lever (124 or 126) separates the brake friction member (134 or 136) from the reel shaft (16 or 18) against the urging force produced by the first urging means (128) and the pinch roller retaining lever (138 or 140) separates the pinch roller (142 or 144) from the capstan (36 or 38) against the urging force produced by the second urging means (162 or 164) when the cam member (50) is located at its first and second angular positions;

the brake lever (124 or 126) brings the brake friction member (134 or 136) in contact with the reel shaft (16 or 18) by the urging force produced by the first urging means (128) and the pinch roller retaining lever (138 or 140) separates the pinch roller (142 or 144) from the capstan (36 or 38) against the urging force produced by the second urging means (162 or 164) when the cam member (50) is located at its third position;

the brake lever (124 or 126) separates the brake friction member (134 or 136) from the reel shaft (16 or 18) against the urging force produced by the first urging means (128) and the pinch roller retaining lever (138 or 140) separates the pinch roller (142 or 144) from the capstan (36 or 38) against the urging force produced by the second urging means (162 or 164) when the cam member (50) is located at its fifth position; and

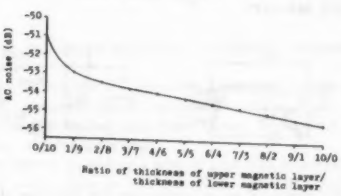
the brake lever (124 or 126) separates the brake friction member (134 or 136) from the reel shaft (16 or 18) against the urging force produced by the first urging means (128) and the pinch roller retaining lever (138 or 140) makes the pinch roller (142 or 144) pinch the magnetic tape (34) with the capstan (36 or 38) by the urging force produced by the second urging means (162 or 164) when the cam member (50) is located at its sixth angular position.

4,554,606

MAGNETIC RECORDING MEDIUM

Takato Karashima, Nishinomiya, and Hiroshi Zaitsu, Takatsuki, both of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Oct. 12, 1982, Ser. No. 433,910
Claims priority, application Japan, Oct. 13, 1981, 56-163620
Int. Cl.[4] G11B *23/00*; B32B *7/02*
U.S. Cl. 360—131 **4 Claims**



1. A magnetic recording medium comprising a non-magnetic support having thereon two magnetic layers, an upper magnetic layer and a lower magnetic layer, each of said magnetic layers consisting essentially of magnetic metallic particles dispersed in a binder said lower magnetic layer having a coercive force of at least 100 oersteds lower than that of said upper magnetic layer, the thicknesses of the upper and lower magnetic layers being in the ratio of the thickness of the upper magnetic layer to that of the lower magnetic layer of 1/1 to 1/9, and the total coercive force of the upper and lower magnetic layers being at least 1,000 oersteds.

4,554,607

FUSE LOSS INDICATING CIRCUIT

Erwin P. Mora, Mt. Clemens, Mich., assignor to Dana Corporation, Toledo, Ohio

Filed Sep. 29, 1982, Ser. No. 428,502
Int. Cl.[4] H02H *5/04*; G08B *21/00*
U.S. Cl. 361—104 **3 Claims**

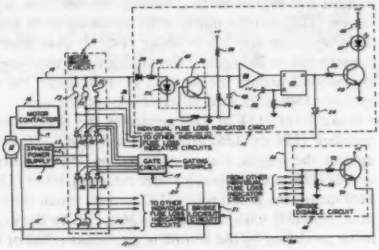
1. In an SCR motor bridge circuit including a power source, at least one fuse for limiting the amount of current supplied by the power source to a motor, a gate circuit for supplying gating signals to the SCR's, and a normally closed motor contactor for supplying power to the motor armature, a fuse loss monitoring and protection circuit comprising:

optical isolator means coupled to monitor the one fuse for generating a set signal when the one fuse has opened;

latching means responsive to said set signal for generating a fuse loss signal;

indicator means responsive to said fuse loss signal for indicating that the one fuse has opened; and

protection means responsive to said fuse loss signal for generating a first disable signal to the gate circuit for disconnecting the gate circuit for supplying the gating signals from the SCR's and for generating a second disable signal to the motor contactor for opening the motor contactor.



4,554,608

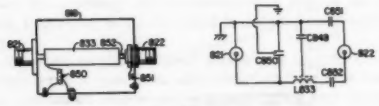
CONNECTOR FOR ELECTROMAGNETIC IMPULSE SUPPRESSION

Roger R. Block, P.O. Box 1198, Gardnerville, Nev. 89410

Continuation-in-part of Ser. No. 441,765, Nov. 15, 1982, Pat. No. 4,409,637. This application Oct. 6, 1983, Ser. No. 539,709

Int. Cl.[4] H02H *3/22*

U.S. Cl. 361—119 **23 Claims**



1. An electrical surge suppressor for shunting electromagnetic impulse energy traveling along a radio frequency signal transmission line of the type having primary and secondary conductors and a known characteristic impedance therebetween, the suppressor comprising in combination:

first and second electrical connector means each having primary and secondary conductors for being operatively interposed along the primary and secondary conductors of the radio frequency signal transmission line;

discharge means including first and second discharge devices each for defining a known breakdown voltage and a known capacitance between first and second sections thereof;

first means for electrically coupling said first section of said first discharge device between said primary conductors of said first and second electrical connector means;

second means for electrically coupling said first section of said second discharge device between said secondary conductors of said first and second electrical connector means;

a first capacitor interposed along said first means and a second capacitor interposed along said second means for blocking the flow of DC energy through the primary and secondary conductors; and

third means for electrically coupling said second section of each of said discharge devices to a ground potential, with said first means and said second means and said third means having known inductances which interact with the capacitance of said discharge means and any stray capacitance of the combination thereof to produce a charcteristic impedance which is generally equal to the characteristic impedance of the radio frequency signal cable, whereby the suppressor will shunt electrical impulse energy to ground potential while normally representing a low standing wave ratio for radio frequency energy transmitted along the transmission line.

4,554,609

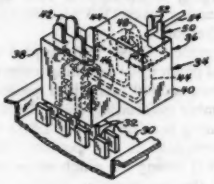
TRANSIENT VOLTAGE PROTECTOR

William E. Ruehl, Wheeling; Richard H. Heidorn, Lombard, and Edwin G. Swick, Bartlett, all of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 5, 1984, Ser. No. 568,178

Int. Cl.[4] H02H *1/04*

U.S. Cl. 361—119 **10 Claims**



1. A transient voltage protector for telephone circuits and the like comprising an insulating plastic housing having a lower portion and an upper portion, at least one terminal in said lower portion and each of said at least one terminal having a female connector thereon disposed within said housing, said housing having an aperture therein respectfully aligned with each of said female connectors for admitting a male terminal such as on a telephone connector, voltage limiting means in said upper housing portion, means connecting said voltage limiting means to one of said at least one terminal, a grounding terminal in said upper housing portion, means connecting said voltage limiting means to said grounding terminal, an opening in said upper housing portion adjacent said grounding terminal, and a connector on said grounding terminal extending through said opening and out of said housing.

4,554,610

MAGNETIC GRIPPING DEVICE

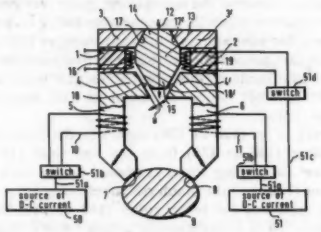
Rudi Metz, Donzdorf, and Herbert Scholl, Göppingen, both of Fed. Rep. of Germany, assignors to EMAG Mashinenfabrik GmbH, Salach, Fed. Rep. of Germany

Filed Jun. 1, 1984, Ser. No. 616,516

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1983, 3319928

Int. Cl.[4] H01F *7/04*

U.S. Cl. 361—144 **17 Claims**



1. A device for manipulating magnetizable loads, comprising a permanent magnet having two pole shoes and a first magnetic flux conductor connected with said pole shoes and defining a first gap; an electromagnet having two pole shoes constituting extensions of the pole shoes of said permanent magnet and a magnetic flux conductor connected to the pole shoes of said electromagnet in parallel with said first conductor and defining

a second gap; and an armature movable between a first position in which it fills only said first gap and contacts the first conductor at both sides of the first gap, and a second position in which it fills only said second gap and contacts the second conductor at both sides of such second gap.

4,554,611

ELECTROSTATIC CHUCK LOADING

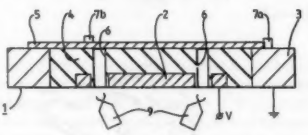
Ian H. Lewin, Forest Row, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 30, 1984, Ser. No. 645,631

Claims priority, application United Kingdom, Feb. 10, 1984, 8403547

Int. Cl.⁴ H01F *13/02*

U.S. Cl. 361—234 **8 Claims**



1. A method of loading a semiconductor wafer onto an electrostatic chuck having a layer of dielectric material on an electrically conductive member, and means for electrically contacting the wafer, which method includes the steps of locating the wafer on the dielectric layer contiguously to the contact means, connecting an external voltage source to provide a potential difference between the contact mens and the electrically conductive member thereby clamping the wafer to the chuck, and subsequently disconnecting the external voltage source whereupon the wafer remains clamped due to the effect of charge retention in the dielectric, characterised by the further step of displacing the wafer on the dielectric layer at least after connecting and before disconnecting the external voltage source.

4,554,612

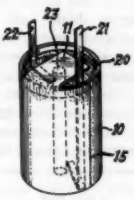
AC METALLIZED FILM CAPACITOR

John J. Childs, Bennington, Vt., assignor to Sprague Electric Company, North Adams, Mass.

Filed Aug. 6, 1984, Ser. No. 637,995

Int. Cl.⁴ H01G *1/14, 9/00*

U.S. Cl. 361—306 **11 Claims**



1. A capacitor encased in a metal housing comprising a wound capacitor section having two electrodes each bearing a tab, one of said tabs extending from a bottom edge of said section along its height to above a top edge of said section, another of said tabs extending above said top edge, and a unitary spacer enclosing and insulating said section from said housing and insulating said tabs from each other, said section, and said housing, said spacer having a main body portion rectangular in shape having a rectangular extension on one long side of said body portion near an end thereof and a cutout portion on a long side of said body opposite said extension, said extension being folded over said top edge between said tabs insulating them from each other and said top edge.

4,554,613

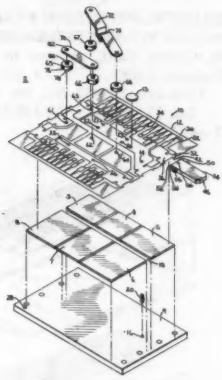
MULTIPLE SUBSTRATE CIRCUIT PACKAGE

Lance R. Kaufman, 131 N. White Oak Way, Mequon, Wis. 53092

Filed Oct. 31, 1983, Ser. No. 546,997

Int. Cl.⁴ H05K *1/18*

U.S. Cl. 361—386 **17 Claims**



1. A circuit package for high power application comprising:
a base plate;
a plurality of electrically insulative thermally conductive separate substrates bonded on said base plate;
circuit means, including lead frame means, bonded on said plurality of substrates; and
alignment means including a hole in said lead frame means aligned with a hole in said base plate through a gap between said substrates.

4,554,614

ELECTRIC CIRCUIT ASSEMBLY COMPRISING A PRINTED WIRING BOARD

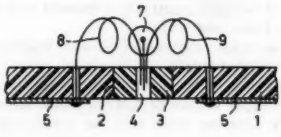
Hendricus M. van der Wijst, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 27, 1983, Ser. No. 498,618

Claims priority, application Netherlands, Jun. 7, 1982, 8202285

Int. Cl.⁴ H05K *1/18*

U.S. Cl. 361—400 **8 Claims**



1. An electric circuit assembly, comprising:
a printed wiring board made of a first electrically insulating material, having a plurality of openings therethrough for electrical interconnections,
a network of printed circuit conductors on the board, and
at least two circuit components interconnected through said conductors and interconnections,
characterized in that said first electrically insulating material has a given impermeability to moisture,

said printed wiring board has one opening having a size greater than the other openings for interconnections,

said assembly comprises a single member only, made of a second electrically insulating material having a moisture impermeability greater than the impermability of said first material, and having a single aperture therethrough, said member being fitted in said one opening, and

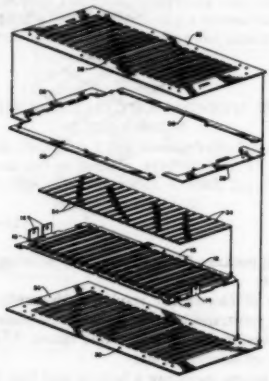
a plurality of said circuit components are electrically interconnected by connections disposed in said aperture.

4,554,615

ELECTRICALLY CONDUCTING PANEL AND METHOD OF MAKING SAME

Ralph Clark, Carson, Calif., assignor to Bussco Engineering, Inc., El Segundo, Calif.

Filed Jun. 1, 1983, Ser. No. 500,035
Int. Cl.[4] H05K *1/11*; H02G *5/00*
U.S. Cl. 361—412 **2 Claims**



1. The method of making an electrically conducting panel comprising the steps of:

utilizing a pair of electrically conductive frames with each frame having at least one pair of electrically connecting plugs and each frame having a plurality of spaced apart enlarged openings;

locating the lower surface of one of said frames against a sheet material, electrically insulative, base section wherein the peripheral edge of said base section extends exteriorly of the peripheral edge of said one frame;

placing a plurality of sheet material, electrically insulative, inserts about the periphery of said one frame wherein each insert has an inner edge configuration closely conforming to the portion of said one frame that it abuts and the outer edge of each said insert is in alignment with the peripheral edge of said base section;

placing an electrically insulative insert within each enlarged opening substantially closing such;

locating a sheet material, electrically insulative, center cover on the upper surface of said one frame substantially completely covering same with the peripheral edge of said center cover being aligned with the peripheral edge of said base section;

placing the other frame of said pair of frames on said center cover;

placing a plurality of sheet material electrically insulative, inserts about the periphery of said other frame in a manner similar to the above first placing step and inserts within each enlarged opening in a manner similar to the above second placing step;

locating a sheet material, electrically insulative, top cover on said other frame substantially completely covering same with the peripheral edge of said top cover being aligned with the peripheral edge of said center cover;

bonding together entire assemblage of parts to form an integral unit resulting in said panel; and

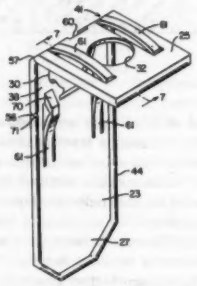
physically removing most of each insert located within each enlarged opening leaving intact the edge of each insert forming a continuous, electrically insulative, smooth wall surface for each enlarged opening.

4,554,616

PROTECTIVE SHIELD FOR EXTERNAL ELECTRICAL PARTS OF A CONTROL ARRANGEMENT AND THE COMBINATION THEREOF

Harold A. McIntosh, Crestline, Calif., assignor to RobertShaw Controls Company, Richmond, Va.

Filed Jul. 2, 1984, Ser. No. 627,047
Int. Cl.[4] H02B *1/04*
U.S. Cl. 361—424 **5 Claims**



1. In a combination of a control arrangement having housing means provided with certain external electrical means and a one-piece protective shield carried by said housing means and having a section thereof covering said certain external electrical means, the improvement wherein said section of said protective shield is movable relative to the remainder of said shield between a first position thereof that covers said certain external electrical means and a second position thereof that uncovers said certain external electrical means, said protective shield being substantially flat when said section is in said first position thereof, said section of said protective shield being substantially transverse to said remainder of said shield when said section is in said second position thereof, said protective shield having hinge means that hinge said section to said remainder of said protective shield, said hinge means having means that holds said section in said first position thereof when said section is moved to said first position thereof and that holds said section in said second position thereof when said section is moved to said second position thereof, said housing means having socket means, said shield having integral projection means on the remainder thereof received in said socket means and thereby securing said shield to said housing means.

4,554,617

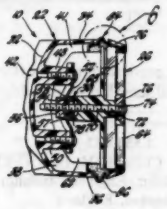
ADJUSTABLE LAMP ASSEMBLY

David O. Tyler, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 22, 1984, Ser. No. 663,411
Int. Cl.[4] B60Q *1/06*
U.S. Cl. 362—61 **3 Claims**

1. An adjustable lamp assembly for an automobile, said lamp assembly comprising a support housing, a lamp unit including a reflector member and a lens member, an adjustment mechanism connecting said lamp unit to said support housing for adjustable positioning of said lamp unit between two extreme positions about a horizontal axis, said adjustment mechanism

including a pair of bosses extending rearwardly from said reflector member, a bore formed in each of said bosses, cooperating pivot means formed on said bosses and on said support housing for allowing said lamp unit to pivot about said horizontal axis, a screw located in each of said bores in said pair of bosses, a plate member carried by said housing, a nut threadably receiving each screw and supported by said plate member for movement between said two extreme positions along an arc having said horizontal axis as its center so that upon tightening of said screw, said nut is drawn into frictional engagement with said plate member whereby said lamp unit maintains an adjusted position between said two extreme positions.

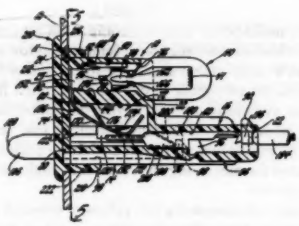


4,554,618

SWITCH, LAMP, AND CONNECTOR ASSEMBLY

Daniel V. Bafunno, Warren; Gary C. Detter, Berlin Center, both of Ohio; James D. Ehrhardt, El Paso, Tex.; Patrick J. Gaughan, West Farmington, Ohio; Dale C. Johnson, Cortland, Ohio, and Richard C. Rowlands, Warren, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 14, 1984, Ser. No. 609,839
Int. Cl.[4] H01H *3/16*
U.S. Cl. 362—155 **5 Claims**



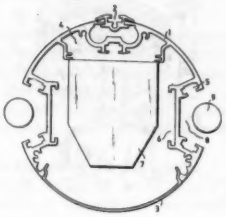
1. A closure actuated switch, lamp, and connector assembly for illuminating a compartment comprising, an insulator having a front side and a back side and including an integral socket portion and an integral connector body portion, means mounting said insulator adjacent said compartment, first passage means in said insulator including a pair of parallel contact passages in said socket portion between said front and said back sides, second passage means in said insulator including a pair of parallel terminal passages extending from said back toward said front side, a pair of unitary contacts each having a body portion adapted for plug-in reception from said front side in respective ones of said contact passages and an integral leg portion concurrently extending into a corresponding one of said terminal passages, a bulb, means operative to support said bulb on said socket portion and to define an electrical circuit through said bulb from one of said contact body portions to the other, a pair of terminals on respective ones of a pair of conductors, each of said terminals being received in plug-in fashion from said back side in respective ones of said terminal pasages and engaging the corresponding one of said contact leg portions to complete a circuit between said conductors through said bulb for energizing the latter, and cam and plunger means on said insulator operable by said closure in response to compartment closing movement thereof to separate one of said contact leg portions from the corresponding one of said terminals and interrupt the circuit through said bulb whereby illumination of said compartment is terminated.

4,554,619

LAMP WITH A LINEAR LIGHT SOURCE

Armin Bansbach, and Helmut Senkel, both of Berlin, Fed. Rep. of Germany, assignors to Semperlux GmbH, Berlin, Fed. Rep. of Germany

Filed Oct. 9, 1984, Ser. No. 658,614
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1983, 8330300[U]
Int. Cl.[4] F21S *7/00*
U.S. Cl. 362—222 **17 Claims**



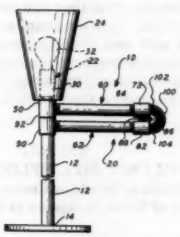
1. A lamp, comprising a housing having an inspection cover and formed with a suspension groove, a chamber for accommodating a wiring, and further including fixtures for weldless longitudinal joints and fixtures for receiving lamp supports; a switching circuit device; and at least one linear light source, said housing being provided with at least one continuous recess which opens outward of said housing, said linear light source being at least partially accommodated in said recess.

4,554,620

LAMP AND LAMP ARM

Jerome Warshawsky, 1322 Everitt Pl., Hewlett Harbor, N.Y. 11557

Filed May 25, 1984, Ser. No. 613,810
Int. Cl.[4] F21V *21/26*
U.S. Cl. 362—269 **26 Claims**



1. A support arm for the light source of a lamp comprising:
(a) first support arm section means;
(b) second support arm section means;
(c) articulation means connecting said first support arm section means and said second support arm section means so as to enable said support arm, and a light source when carried thereby to assume either one of only two selected dispositions;
(d) said articulation means including hinge means enabling movement of said first support arm section and said sec-

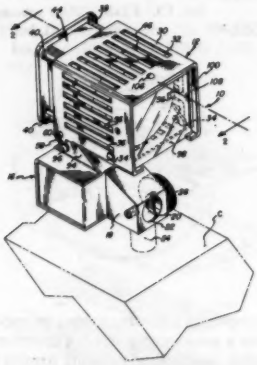
ond support arm section one with respect to the other about said hinge means, and disposition of said first support arm section and said second support arm section, one with respect to the other, into said either one of said only two selected dispositions.

4,554,621

MODULAR LIGHT ASSEMBLY

John J. Corrigan, Washington, Conn., assignor to Anton/Bauer, Inc., Shelton, Conn.

Filed Oct. 29, 1984, Ser. No. 665,939
Int. Cl.[4] H01R *33/00*
U.S. Cl. 362—382 **15 Claims**



1. A modular light assembly comprising:

a base member,

at least one electrical socket means pivotably mounted on said base member,

a light module having

a housing adapted to mount a lamp, said housing including a pair of sideplates and a hood pivotably mounted to said sideplates and pivotable from a first position forming an enclosure with said sideplates to a second position permitting access to the interior of said enclosure for removing and replacing a lamp mounted therein,

means for securing said module onto said electrical socket means, and

means between said electrical socket means and module for releasably retaining said module on said electrical socket means, with the lamp in said module in electrical contact with said electrical socket means, and

means on said base member for securing said base member to a support, said means including a pocket on the module slidably received on the electrical socket means.

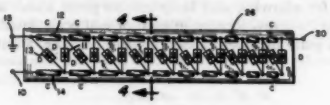
4,554,622

COMPACT VOLTAGE MULTIPLIER FOR SPRAY GUNS

Gordon V. Mommsen, Brooklyn Center, and Dale R. Hemming, Fridley, both of Minn., assignors to Graco Inc, Minneapolis, Minn.

Filed Sep. 22, 1983, Ser. No. 534,740
Int. Cl.[4] H02M *7/00*
U.S. Cl. 363—61 **6 Claims**

1. A solid state voltage multiplier circuit of the Cockcroft-Walton type having capacitors and diodes connected in multiple stages and having the first stage adapted for coupling to a predetermined voltage source and the Nth stage adapted for coupling to a load, and wherein all capacitors have substantially the same capacitance values, and wherein the voltage rating of each of said capacitors is directly proportional to a length dimension of said capacitor, comprising said first stage capacitors having a predetermined first voltage rating and hence a predetermined length dimension, and said Nth stage capacitors having predetermined lower voltage ratings than



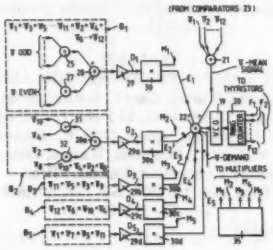
said first stage, and have predetermined shorter length dimensions, whereby the overall length of said multiplier is reduced.

4,554,623

FIRING-ANGLE CONTROL IN INVERTERS

John D. Ainsworth, Stafford, England, assignor to Associated Electrical Industries Limited, England

Filed Feb. 9, 1984, Ser. No. 578,514
Claims priority, application United Kingdom, Feb. 14, 1983, 8304016
Int. Cl.[4] H02M *1/08*
U.S. Cl. 363—96 **9 Claims**



1. In a multi-phase inverter comprising a bridged array of phase-controlled unidirectional semiconductor switching devices and a controllable source of firing pulses for firing said semiconductor switching devices at controlled firing instants, each said switching device having an individual extinction angle, a phase control system linked to said semiconductor switching devices and said source of firing pulses, comprising:

(a) means for measuring the extinction angle of each switching device

(b) means for comparing the values of selected pairs of sums of one or more selected extinction angles and deriving at least one net difference signal, and

(c) means for deriving from the at least one net difference signal a control signal for selectively controlling the firing of said controllable source of firing pulses at times corresponding to the firing instants of those switching devices which determine the selected extinction angles.

4,554,624

RAILROAD MEASURING, GAUGING AND SPIKING APPARATUS

Thomas D. Wickham, Fairmont, and Wayne R. Monson, Hamburg, both of Minn., assignors to Harsco Corporation, Camp Hill, Pa.

Filed Oct. 31, 1983, Ser. No. 547,396
Int. Cl.[4] G05B *13/02;* **E01B** *29/04, 35/02;* **B61K** *9/08*
U.S. Cl. 364—148 **41 Claims**

21. A railroad measuring, gauging and spiking apparatus operable to bring a distance between rails to a desired gauge comprising;

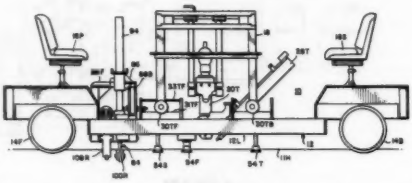
a frame;

a sensor mounted on said frame having a sensor output

representative of the distance between a pair of rails at a gauge point;

a gauging mechanism operable in a first direction and in a second direction to change the distance between the pair of rails, said gauging mechanism including inboard pushing means for increasing a separation between the rails and outboard pushing means for decreasing the separation between the rails;

a gauge setter for setting the desired gauge of the rails;



a feedback control circuit operable to receive said sensor output and operable to compare an actual gauge of the rails with the desired gauge of the rails as set on the gauge setter and operable to control said gauging mechanism to automatically bring the rails into the desired gauge; and

a spiker for spiking at least one rail into position after the gauging mechanism has brought the rails to the desired gauge; and

wherein said gauge point is closed to said spiker than it is to said gauging mechanism.

4,554,625

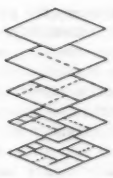
METHOD FOR GENERATING AN OPTIMIZED NESTED ARRANGEMENT OF CONSTRAINED RECTANGLES

Ralph H. J. M. Otten, Croton-on-Hudson, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1983, Ser. No. 504,206

Int. Cl.[4] B26D *5/00*

U.S. Cl. 364—148 **24 Claims**



1. A method for allocating rectangular areas for given elements on a rectangular surface of a product such as an integrated circuit, each element being limited by a shape constraint and related to the other elements by proximity information, comprising the steps of:

deriving a distance space to position a center of each said element on said product surface in a configuration of points in a plane;

constructing a slicing structure from said point configuration of said element centers;

determining from the result of the above steps the dimensions, position, and orientation of said elements; and

dividing up said product surface accordingly.

4,554,626

DIGITAL DATA PROCESSING SYSTEM

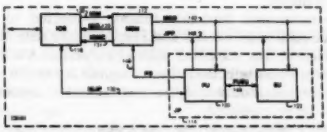
Lawrence H. Katz, Oregon City, Oreg.; Douglas M. Wells, Chapel Hill, N.C., and Richard G. Bratt, Wayland, Mass., assignors to Data General Corporation, Westboro, Mass.

Continuation of Ser. No. 266,531, May 22, 1981, abandoned.

This application Aug. 20, 1984, Ser. No. 642,732

Int. Cl.[4] G05F *9/00*

U.S. Cl. 364—200 **12 Claims**



1. In a multiprogramming data processing system which includes processing means for executing programs in response to processes which control the execution of said programs and virtual processor means temporarily bound to a process and containing state items for permitting said processing means to execute a program under control of said process, said system including

process synchronization means comprising

processing await means for performing a process level await operation to suspend the execution of a program which is controlled by a process;

virtual processor await means responsive to said process level await operation for performing a virtual processor level await operation and for temporarily inhibiting the loading of state items required for the execution of said program into said processing means;

virtual processor advance means responsive to the occurrence of an event for performing a virtual processor level advance operation to cease the temporary inhibition of the loading of the state items of said process into said processing means; and

process advance means responsive to said virtual processor level advance operation for causing said processing means to resume the execution of the suspended program which is under the control of said process.

4,554,627

DATA PROCESSING SYSTEM HAVING A UNIQUE MICRO-SEQUENCING SYSTEM

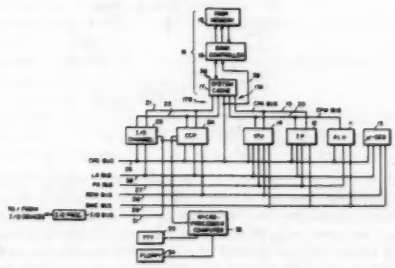
Charles J. Holland, Northboro; Kenneth D. Holberger, N. Grafton; David I. Epstein, Natick; Paul Reilly, Foxboro, and Josh Rosen, Westboro, all of Mass., assignors to Data General Corporation, Westboro, Mass.

Continuation of Ser. No. 143,710, Apr. 25, 1980, abandoned.

This application Mar. 9, 1983, Ser. No. 473,560

Int. Cl.[4] G06F *13/00*

U.S. Cl. 364—200 **10 Claims**



1. In a data processing system having a central processor

which includes means for decoding macroinstructions to produce starting microaddresses of micro-instructions and a microsequencing means for providing one or more successive micro-instructions for execution by said central processor, said micro-sequencing means comprising

microcontrol store means for storing a plurality of micro-instructions;

said microcontrol store means being responsive to a selected microaddress for accessing a current micro-instruction stored at said selected microaddress of said microcontrol store means;

micro-instruction decoding means connected to said microcontrol store means and responsive to selected bits of said currently accessed micro-instruction for providing microaddress selection control signals for use in determining the microaddress of the next successive micro-instructions to be executed;

a plurality of microaddress sources capable of supplying the microaddress of the next successive micro-instruction, said microaddress sources including microprogram counter means for providing the microaddress of the next successive micro-instruction stored in said microcontrol store means and said macro-instruction decoding means for providing a starting microaddress; and

microaddress selection logic responsive to at least said microaddress selection control signals for selecting the microaddress of the next micro-instruction to be executed from one of said plurality of microaddress sources independently from all the other said microaddress sources and for supplying said selected microaddress directly and immediately to said microcontrol store.

4,554,628

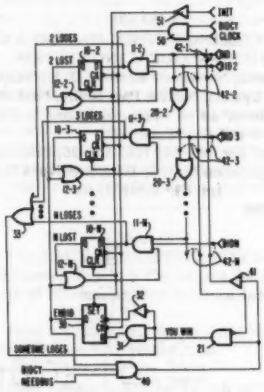
SYSTEM IN WHICH MULTIPLE DEVICES HAVE A CIRCUIT THAT BIDS WITH A FIXED PRIORITY, STORES ALL LOSING BIDS IF ITS BID WINS, AND DOESN'T BID AGAIN UNTIL ALL STORED BIDS WIN

John L. Bell, Escondido, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 293,453, Aug. 17, 1981, abandoned. This application Nov. 9, 1984, Ser. No. 670,117

Int. Cl.[4] G06F *9/46*

U.S. Cl. 364—200 **9 Claims**



1. A system comprised of a plurality of devices coupled to a time-shared data bus where each device includes a means for sending messages over said bus in a time-shared fashion; the improvement being that at least three of said devices incorporate their own bid control circuit which is comprised of:

means for bidding for the use of said bus with a priority which is fixed;

means for determining if a bid from the device into which said circuit is incorporated is the highest priority bid being made by said plurality of devices;

means for storing all bids other than its own bid upon said determination that the bid from the device into which said circuit is incorporated is the highest priority bid being made; and

means for inhibiting all bids from the device into which said circuit is incorporated, after said storing operation, until each of said stored bids has thereafter become the highest priority bid being made.

4,554,629

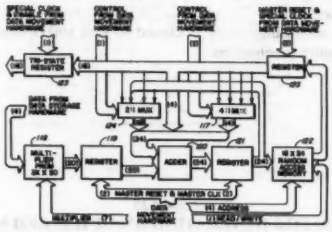
PROGRAMMABLE TRANSFORM PROCESSOR

Winthrop W. Smith, Jr., 100 Mariner Way, Maitland, Fla. 32751

Filed Feb. 22, 1983, Ser. No. 468,336

Int. Cl.[4] G06F *9/00, 11/00, 7/38*

U.S. Cl. 364—200 **4 Claims**



1. A programmable transform processor comprising in combination:

input and output means for receiving and transmitting data;

data storage means for storing input data and intermediate transform results and for storing completed computational results;

arithmetic processing means for processing input signals including multiplier accumulator means to perform a multiplier accumulator function, said arithmetic processing means having the multiplication function performed as a sequence of products combined in the accumulator portion of said arithmetic processing means simultaneously with the accumulator accumulating the sum of products therein and said arithmetic processing means multiplier accumulator means having an accumulator portion for accumulating partial multiplier products and the sum of the accumulated multiplier products, simultaneously in an adder circuit and said multiplier accumulator means having an accumulation register having a plurality of storage locations therein;

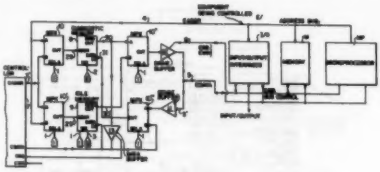
data control means operatively connected to the input and output means, the data storage means and the arithemtic processing means for controlling the input and output of data for the input and output means and the operation of the arithmetic processing means and the control of data to and from the data storage means and said data control means including a memory means which has preprogrammed sequencing data stored therein for addressing said data storage means by individually developing a portion of a data storage address.

4,554,630

CONTROL APPARATUS FOR BACK-DRIVING COMPUTER MEMORY AND FORCING EXECUTION OF IDLE LOOP PROGRAM IN EXTERNAL MEMORY

Brian Sargent, Tyngsboro, and James Skilling, Harvard, both of Mass., assignors to GenRad, Inc., Concord, Mass.

Filed Aug. 24, 1981, Ser. No. 295,765
Int. Cl.[4] G06F *11/00, 13/00, 9/00*
U.S. Cl. 364—200 6 Claims



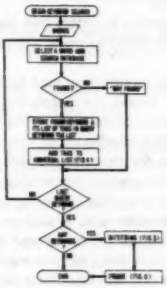
1. External computer control apparatus for use with a computer having addressed computer memory comprising, diagnostic memory means external to the computer memory for storing addressed test data to be transferred to or from the computer, said diagnostic memory means having at least some addresses that correspond to predetermined addresses of said computer memory, means for connecting fhe diagnostic memory means to the computer and including driver means for back-driving the computer memory at said predetermined addresses thereof and for thereby forcing the computer to operate upon data stored at addresses in the diagnostic memory means that correspond to said predetermined addresses, rather than to operate upon data stored in the computer memory at said predetermined addresses, idle memory means for storing an idle loop program and connecting means for alternately connecting the idle memory means or the diagnostic memory means to the computer, said idle loop program comprising a series of no-operation fetch and execute instructions, whereby data may be read into or out of the diagnostic memory means while the computer executes the idle loop program stored in the idle memory means.

4,554,631

KEYWORD SEARCH AUTOMATIC LIMITING METHOD

Thomas B. Reddington, Kingwood Township, Hunterdon County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 13, 1983, Ser. No. 513,158
Int. Cl.[4] G06F *15/40*
U.S. Cl. 364—300 8 Claims



1. A method for retrieving query keyword locations in a textual database, the method comprising the steps of

constructing a tabulation of all keywords of said database together with indications of their respective locations in said database,

identifying at least one location in said database that is common to keywords of a query keyword set, said set including either all of said query keywords or at least two subsets of said query keywords, and

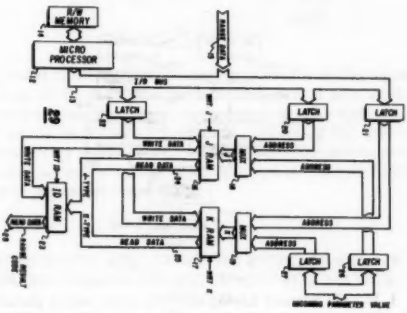
limiting said identifying step to subsets that contain at least one keyword not included in a larger set having an identified common location.

4,554,632

METHOD AND APPARATUS FOR DETERMINING IF A DIGITAL VALUE LIES WITHIN A RANGE

Richard A. Nygaard, Jr., and Fredrick J. Palmer, both of Colorado Springs, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 28, 1982, Ser. No. 392,980
Int. Cl.[4] G06F *9/00*
U.S. Cl. 364—300 20 Claims



1. A method of addressing memories to determine if a parameter value lies within a range defined upon an ordered collection of m-n discrete values for the digital signals, comprising the steps of:

representing instances of the m-n discrete values of the digital signals in the form of two digits J and K, where J represents the most significant portion of the value and the radix of J is m, and where K represents the remaining least significant portion of the value and the radix of K is n;

dividing the digital signals into a most significant group representing J and a least significant group representing K;

representing the left and right endpoints of the range as the JK pairs $J_L K_L$ and $J_R K_R$, respectively;

partitioning the m-many values of J into groups delimited by J_L and J_R;

assigning J-types to the groups of J-values to distinguish the various ways those groups affect whether or not the parameter value lies within the range;

storing the assigned J-types in a first memory means addressed by the most significant group of digital signals;

partitioning the n-many values of K into groups delimited by K_L and K_R;

assigning K-types to the groups of K-values to distinguish the various ways those groups affect whether or not the parameter value lies within the range;

storing the assigned K-types in a second memory means addressed by the least significant group of digital signals;

finding in the first memory means the assigned J-type associated with the J portion of a parameter value;

finding in the second memory means the assigned K-type associated with the K portion of that same parameter value; and

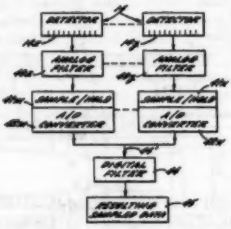
indicating whether or not the parameter value lies within the range, based upon the particular combination of the J-type and K-type resulting from the two finding steps above.

4,554,633

SAMPLED DATA CT SYSTEM INCLUDING ANALOG FILTER AND COMPENSATING DIGITAL FILTER

Gary H. Glover, Waukesha; Dennis G. DallaPiazza, Oconomowoc, and Norbert J. Pelc, Wauwatosa, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Sep. 30, 1982, Ser. No. 428,771
Int. Cl.[4] G06F *15/42*; G01T *1/17*
U.S. Cl. 364—414 **6 Claims**



1. In a CT scanner having an x-ray source and a plurality of detector cells for producing and measuring radiation passed through a body, the scanner having a predetermined scan speed, wherein the improvement comprises a sampled data system for producing a plurality of discrete x-ray readings comprising in combination, means responsive to the respective detector cells for producing a plurality of analog signals having magnitudes varying in proportion to the radiation received by the associated detector cells during a scan, a plurality of analog filters for filtering the analog signals each having a non-ideal characteristic, sample and hold means for receiving the filtered signals and producing discrete samples thereof at a sampling rate coordinated to the scanning speed of the scanner, digitizer means for digitizing the sampled signals, and a digital filter operating on the digitized signals and having a predetermined characteristic coordinated to that of the analog filters for compensating for the non-ideal characteristic of the analog filters and producing a more nearly ideal composite filter characteristic.

2. The sampled data system as set out in claim **1** wherein the analog filters have a characteristic which sharply attenuates the analog signals at frequencies above the cutoff frequency but as a result thereof introduce distortion in the analog signals below the cutoff frequency, and the digital filter has a characteristic adapted to compensate for the distortion introduced by the analog filters, thereby to produce a more nearly ideal composite filter characteristic.

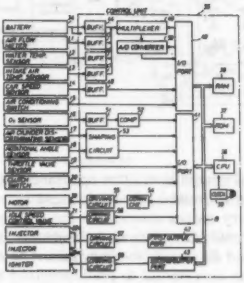
3. The sampled data system as set out in claims **1** or **2** wherein the scanner has a plurality of scan speeds but the sample and hold means has only a single sampling rate, wherein the digital filter further comprising a plurality of digital filters corresponding to the plurality of scan speeds, the digital filters having different bandwidths related to the respective scan speeds for band limiting the digitized sampled signals to the bandwidth associated with the respective scan speeds.

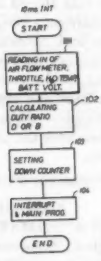
4,554,634

ELECTRONICALLY CONTROLLED FUEL INJECTION SYSTEM

Kazuo Shinoda, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 11, 1983, Ser. No. 474,322
Claims priority, application Japan, Apr. 2, 1982, 57-55624
Int. Cl.[4] F02M *39/00, 51/00*; F02D *5/02*
U.S. Cl. 364—431.10 **8 Claims**




6ms INT
START
READING IN OF AIR FLOW METER, THROTTLE, NO. TEMP, BATT. VOLT.
CALCULATING DUTY RATIO D OR B
SETTING DOWN COUNTER
INTERRUPT & MAIN PROG.
END

1. An electrically controlled fuel injection system for an engine, comprising:

a controlled injector to inject fuel into the engine;

controllable fuel pump means for sending pressurized fuel to said injector;

motor means for controlling said fuel pump means;

control circuit means for outputting pulse signals to said motor indicative of duration of fuel injection corresponding to operative conditions of the engine;

detecting means for detecting engine load;

sensing means for sensing on-condition of the engine; and

means, responsive to said detecting and sensing means, for decreasing the duty ratio of said pulse signals output from said control circuit means to said motor means in accordance with decreasing engine load detected by said detecting means and for selectively increasing said duty ratio in accordance with the sensed condition of the engine sensed by said sensing means, thereby reducing fuel pump means operation noise and power consumption during low engine load conditions while providing adequate engine performance.

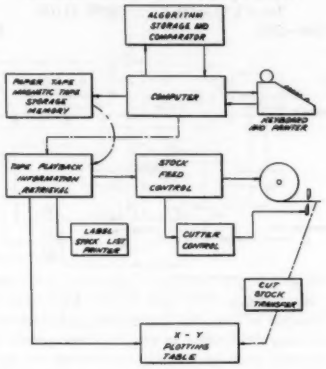
4,554,635
METHOD AND APPARATUS FOR MARKING OR CUTTING LAMINAR PATTERNS OR FORMS

Richard W. Levine, Dobbs Ferry, N.Y., assignor to Construction Technology, Inc., Dobbs Ferry, N.Y.

Continuation-in-part of Ser. No. 402,607, Jul. 28, 1982, abandoned. This application Jun. 13, 1983, Ser. No. 503,699

Int. Cl.⁴ G06F *15/46*

U.S. Cl. 364—475 **51 Claims**



1. The method of creating a pattern or group of patterns for a three dimensional product which can then be fabricated from patterns of sheet material including the steps of:

creating, through mathematical calculation, the pattern of a selected portion of the end product on the basis of dimensional information;

creating, through mathematical calculation, the others of the patterns of the end product;

positioning all the patterns required for such end product in a grouping such that the grouping when aligned on a sheet material may be severed from the sheet material by a single, substantially straight, cut across the sheet material;

positioning selected pairs of patterns in said group with like edge configurations into relative juxtaposition,

comparing said pairs of patterns to yield a juxtaposition which provides for optimum material usage and for severance of the patterns with a minimum of cutting steps; and

converting the optimum pattern or group of patterns into physical form onto a sheet of material.

4,554,636
APPARATUS FOR TESTING CIRCUITS WITHIN A SYSTEM

Joseph A. Maggi, and Barry F. Wilensky, both of Brooklyn, N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 30, 1982, Ser. No. 429,599

Int. Cl.⁴ G01R *31/00*

U.S. Cl. 364—481 **18 Claims**

6. In a system for testing equipment by using means to generate programs for a plurality of time-dependent functions, apparatus for testing circuits within the system comprising:

(a) a plurality of test point multiplexers within the system, each multiplexer selecting data from at least one of a plurality of test points, the test point multiplexers providing test point multiplexer outputs;

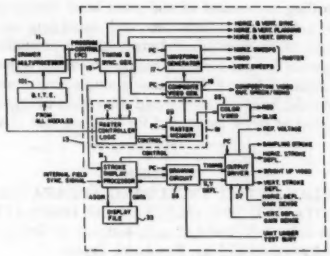
(b) a first multiplexer receiving analog signals from a plurality of the test points multiplexers and generating an analog output;

(c) output means;

(d) means connected to the first multiplexer, said means converting the analog output to corresponding digital output data, the converting means providing said digital output data to the output means;

(e) a digital multiplexer receiving digital signals from a plurality of the test point multiplexers and generating a digital output;

(f) a delay generator connected to the digital multiplexer and generating first and second time delay signals in response to said digital outputs after an appropriate time, the appropriate time being selectable;



(g) means to activate the means to convert the analog signal so as to transmit said corresponding digital data to the output means in response to the first time delay signal; and

(h) means to transmit information concerning the second time delay signal to said output means, the information being an indication of a relationship of at least one of the time-dependent functions.

4,554,637
METHOD FOR REDUCING THE REDUNDANCY OF BINARY CHARACTER SEQUENCES FOR MATRIX PRINTING

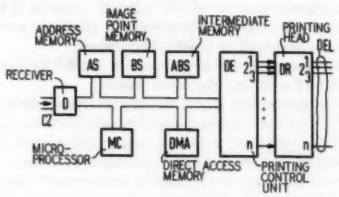
Rudolf Kuntze, Otterfing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 9, 1982, Ser. No. 396,730

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1981, 3132842

Int. Cl.⁴ G06F *15/04*

U.S. Cl. 364—518 **8 Claims**



1. A method for reducing the redundancy of binary character sequences describing characters or graphics patterns in a matrix printer having an image point memory in which said binary character sequences are stored and wherein said characters are represented by a plurality of selected points in a character matrix, said printer having a printing control unit and a printing head movable relative to a recording medium having a plurality of printing elements respectively disposed in rows and columns, each row having only one printing element, said method comprising the steps of:

identifying the location of each point in said matrix with a coordinate pair;

storing each of said binary character sequences for representing a particular character in said image point memory

in a format which includes differential coordinates signifying the magnitude and direction of movement from an immediately preceding printed point in said character to the next successive printed point in said character;

evaluating said binary character sequences in said printing control unit; and

actuating selected ones of said plurality of printing elements in a sequence for printing said particular character on said recording medium in accordance with said binary character sequences for said character and;

controlling movement of said print head during printing in the x-direction relative to said recording medium by means of an operational byte which is contained in said sequence format for each binary character sequence, said operational byte either causing single step movement of said print head or causing said print head to skip a selected number of steps, as needed for printing said character.

4,554,638

DISPLAY DEVICE INCLUDING APPARATUS FOR ROTATING THE IMAGE TO BE DISPLAYED

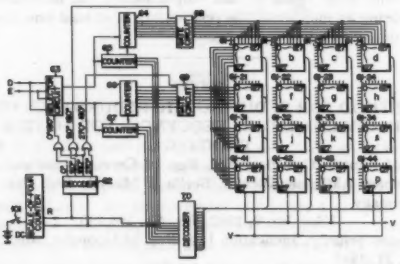
Kazuhiko Iida, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 316,485, Oct. 29, 1981, abandoned. This application Sep. 13, 1984, Ser. No. 650,565

Claims priority, application Japan, Oct. 31, 1980, 55-153272

Int. Cl.[4] G06F *3/153, 15/20*

U.S. Cl. 364—521 **4 Claims**



1. A display device comprising:

a plurality of memory chips arranged in rows and columns to form a matrix array of the memory chips, each of said memory chips having a plurality of randomly accessible addresses arranged in rows and columns;

means for supplying partial picture information to said memory chips for storing the same therein;

means for generating a picture display angle designating signal selectively representing four angles of rotation 0°, 90°, 180° and 270° at which angle said partial picture information is to be stored in said memory chips;

means for supplying, in succession, write enable signals of said partial picture information to said memory chips in accordance with a rotation angle represented by said picture display angle designating signal;

means for designating said randomly accessible addresses of said memory chips in row and column directions wherein all the addresses of memory chips included in rows and columns are simultaneously designated;

means for supplying to said address designation means in row and column directions a first address designation signal in a horizontal direction of said partial picture information and a second address designation signal in a vertical direction of said partial picture information in accordance with said picture display angle designating signal representing a rotation angle; and

a display unit for displaying a partial picture information at said rotation angle, the partial picture information being stored in said memory chips at a rotation angle corresponding to said picture display angle designating signal.

4,554,639

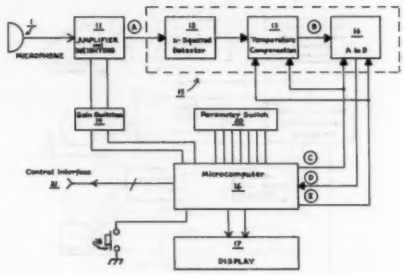
AUDIO DOSIMETER

William B. Baker, Newark, Del., and Harry E. Betsill, Timonium, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 6, 1983, Ser. No. 482,594

Int. Cl.[4] G01H *3/12;* **G08B** *21/00*

U.S. Cl. 364—556 **10 Claims**



1. An audio dosimeter for measuring exposure to sound comprising:

(a) an electronic microphonic sound sensor means which generates electric input signal upon activation by sound;

(b) an amplifier and weighting circuit electrically connected to the sound sensor means which amplifies the input signal from the sound sensor means and provides an "A" weighted signal directly related to the frequency of the sound which activated the sound sensor;

(c) an x-squared detector circuit electrically connected to the amplifier and weighting circuit which receives the input signal and generates a voltage signal which is proportional to the log of the square of the input signal;

(d) temperature compensation circuit electrically connected to the x-squared detector circuit which develops reference signals through ramping and intergrating means matched to the x-squared detector circuit and thereby temperature compensating the voltage signal of the x-squared detector circuit;

(e) analog to digital time converter circuit electrically attached to the temperature compensation circuit which converts the temperature compensated voltage signal to digital time signal;

(f) a microcomputer electrically connected to the temperature compensation circuit and controls the integrating and ramping functions of the circuit and electrically connected to the analog to digital time converter and controls the functions of the converter and receives the digital time signals from the converter and having a calculating means for converting the time signals into sound measurement values.

4,554,640

PROGRAMMABLE ARRAY LOGIC CIRCUIT WITH SHARED PRODUCT TERMS

Sing Y. Wong, and John M. Birkner, both of Sunnyvale, Calif., assignors to Monolithic Memories, Inc., Santa Clara, Calif.

Filed Jan. 30, 1984, Ser. No. 575,845

Int. Cl.[4] H03K *19/20*

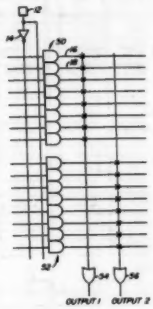
U.S. Cl. 364—716 **4 Claims**

1. A programmable integrated logic circuit array comprising:

(a) a plurality of groups of logical AND gates;

(b) a plurality of logical OR gates;

(c) a matrix of electrical conductor lines arranged in rows and columns comprising:
(i) input lines, and
(ii) AND gate input lines for each of the AND gates within said plurality of groups of logical AND gates;



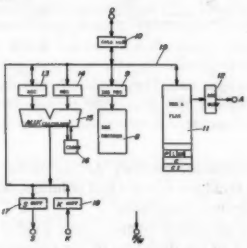
(d) connecting means for selectively connecting the outputs from individual ones of said AND gates to the inputs of one or the other, but not both, of a pair of logical OR gates from among said plurality of logical OR gates; and
(e) means for selectively connecting input lines and AND gate input lines to program a desired logical output from said OR gates.

4,554,641

PROGRAMMABLE CALCULATOR

Isamu Haneda, and Tetsuo Myooi, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 19, 1981, Ser. No. 236,211
Claims priority, application Japan, Feb. 19, 1980, 55-19952
Int. Cl.⁴ G06F *3/023, 9/06, 15/02*
U.S. Cl. 364—710 **3 Claims**



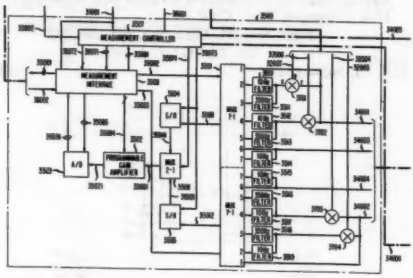
1. A programmable calculator comprising:
display means for displaying numerical or alphabetic data;
key input means for introducing desired numerical or alphabetic data into a space assigned for a variable;
means for providing an annotator, said display means being responsive to said providing means for displaying said annotator; and
display control means for selectively erasing the annotator from the display means and for displaying only the introducted numerical or alphabetic data upon introduction of the numerical or alphabetic data
or for displaying the introduced numerical or alphabetic data together with the annotator upon introduction of the numerical or alphabetic data.

4,554,642

DIGITAL FILTERING WITH MONITORED SETTLING TIME

Harvey Rubin, Morristown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 16, 1982, Ser. No. 399,189
Int. Cl.⁴ G06F *7/38*
U.S. Cl. 364—724 **9 Claims**
MICROFICHE APPENDIX INCLUDED
(18 Microfiche, 1055 Pages)



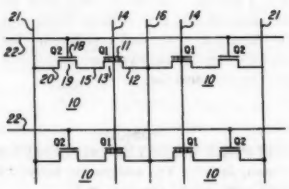
1. Circuitry (3600) for processing a digital signal produced by measurement means (3100,3500) comprising
a plurality of digital filters (4000) connected in cascade, said cascade having an input for receiving said signal and a plurality of encoded signal sample outputs corresponding to the outputs of each of said filters,
means (DC6_SET.d routine) for monitoring each of said encoded signal sample outputs for a settled value determined by a preselected number of consecutive encoded signal samples having amplitude values within a predetermined range amplitudes, and
means (4000) for signaling said measurement means whenever said settled value is detected.

4,554,643

ELECTRICALLY ERASABLE PROGRAMMABLE MNOS READ ONLY MEMORY

Chang-Kiang Kuo, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 49,526, Jun. 18, 1979,. This application Jul. 8, 1982, Ser. No. 647,941
Int. Cl.⁴ G11C *11/40*
U.S. Cl. 365—104 **5 Claims**



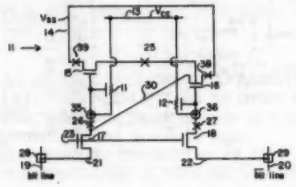
1. A method of making a semiconductor device comprising the steps of: forming a plurality of insulated gate field effect transistor cells in a face of semiconductor body, each of the transistor cells having an MNOS transistor and an MOS transistor, including for each transistor forming a source-drain path and a gate, the transistor cells being formed in a regular pattern to provide a memory array with the source-drain paths of the MNOS transistor and the MOS transistor being connected in series in each cell in the array; applying address lines to said

face and programming lines to said face intersecting each cell in the array for programming the array of memory cells by applying voltage to the gates of both transistors in selected cells and reading the array by applying voltage to the gate of only the MOS transistor in a selected cell.

4,554,644
STATIC RAM CELL

Peter C. Chen, Sunnyvale, and Alex Au, Los Altos, both of Calif., assignors to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed Jun. 21, 1982, Ser. No. 390,082
Int. Cl.⁴ G11C *11/40*
U.S. Cl. 365—154 **13 Claims**



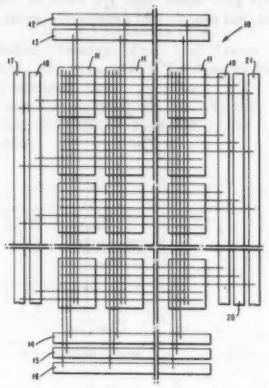
1. A semiconductor memory cell capable of storing a single binary digit (bit) comprising:
- a first voltage supply line;
- a second voltage supply line having a sheet resistivity low enough that the resistance of said second voltage supply line when supplying a plurality of cells which are simultaneously selected does not interfere with proper operation of the cells;
- a word line;
- a bit line;
- a $\overline{\text{bit}}$ line;
- a first and a second transistor each having a source and a drain and each having a gate connected to said word line, said source of said first transistor being connected to said bit line and said suurce of said second transistor being connected to said $\overline{\text{bit}}$ line;
- a third and a fourth transistor each having a gate and a drain and each having a source connected to said second voltage supply line;
- said gate of said third transistor being connected to said drain of said first transistor and to said drain of said fourth transistor, said gate of said fourth transistor being connected to said drain of said second transistor and to said drain of said third transistor; and
- a first and a second load device, said first load device connected between said first voltage supply line and said gate of said third transistor, and said second load device connected between said first voltage supply line and said gate of said fourth transistor.

4,554,645
MULTI-PORT REGISTER IMPLEMENTATION

Anatol Furman, Jericho, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 10, 1983, Ser. No. 473,927
Int. Cl.⁴ G11C *11/40*
U.S. Cl. 365—189 **5 Claims**

1. A dynamic memory cell that can be concurrently written and read or sequentially written and read comprising:
- a write bit line transistor having its drain coupled to a first write bit line, its gate coupled to a first write word line and its source coupled to a storage means and an amplifier,
- said amplifier comprising a transistor whose source is grounded, whose gate is connected to the storage means and whose drain is coupled through first and second read bit line transistors to respective first and second read bit

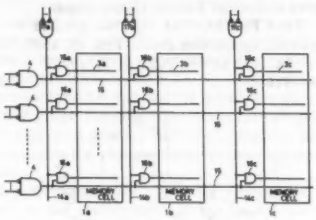


lines, the gates of the read bit line transistors being coupled to respective first and second read word lines.

4,554,646
SEMICONDUCTOR MEMORY DEVICE

Masahiko Yoshimoto; Tsutomu Yoshihara; Kenji Anami, and Hirofumi Shinohara, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1983, Ser. No. 542,388
Int. Cl.⁴ G11C *11/40*
U.S. Cl. 365—189 **12 Claims**



1. A semiconductor memory device including a matrix of memory cells arranged in rows and columns, said semiconductor memory device comprising:
- a plurality of groups of memory cells divided by segmenting said matrix in the direction of the columns;
- memory cell group selection lines for every one of said groups for selecting any one of said plurality of the groups of said memory cells;
- row decoders for every one of said rows for decoding of row address information for a particular memory cell to be accessed;
- preceding word lines each connected to the output of each of said row decoders;
- AND gates each provided for providing a logical product of a group enable signal carried on said memory cell group selection line and a row enable signal from said row decoders on said preceding word lines;
- group word lines each provided per group and per row for receiving the logical product output from each of said AND gates;
- wherein said particular memory cell is accessed with the

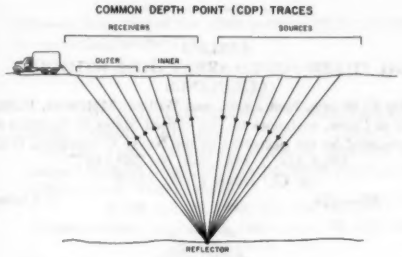
logical product output from the corresponding one of said group word lines.

4,554,647

METHOD FOR MEASURING SEISMIC PHASE SHIFT OF COMPRESSIONAL WAVEFORMS

Bijan J. Rafipour, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 1, 1982, Ser. No. 438,206
Int. Cl.[4] G01V *1/28*
U.S. Cl. 367—48 **2 Claims**



1. A method of distinguishing between gas and water saturation characteristics of subsurface earth formations in which the fluid characteristics of the earth's layerings give rise to unique seismic reflections having identifiable phase characteristics, comprising:

(a) generating seismic compressional pulse waveforms which travel through the subsurface earth formations,

(b) recording the phase shift of said compressional pulse waveforms as they reflect normally from common subsurface reflecting points on subsurface formation interfaces,

(c) recording the phase shift of said compressional pulse waveforms as they reflect at a plurality of incremental oblique angles from said common subsurface reflecting points,

(d) subtracting the recorded phase shift of each of said normally reflected pulse waveforms from the recorded phase shift of those of said plurality of obliquely reflected pulse waveforms which reflect from the same common subsurface reflecting point as each of said normally reflected pulse waveforms to determine the amount of phase change observable for each incremental oblique reflection angle about each of said common subsurface reflecting points,

(e) identifying subsurface porous layers having the greater phase changes attributable to the plurality of obliquely reflected pulse waveforms about each of said common subsurface reflecting points along the interfaces of said subsurface porous layers as the water saturated formations and those with the lesser phase changes as the gas saturated formations, and

(f) correcting said observable phase change for formation geometric dispersion $\Delta\phi_2$ in accordance with the following

$$\Delta\phi_2=(\Delta x)(f)[1/[C-\Delta C(f)]-1/C]$$

where

Δx = the difference in path length with respect to normal incidence;

f = frequency of the seismic pulse waveform;

C = constant (2.38 Km/sec); and

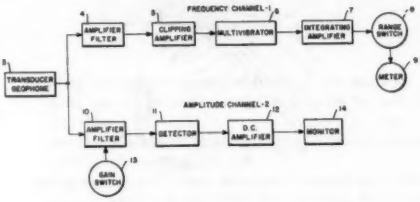
$\Delta c(f)$ = phase velocity: $(c_1)(\text{Cosec}\theta)$, where c_1 is sound velocity through the subsurface formation and θ is the angle of incidence of the seismic pulse waveform with respect to the normal incidence at the subsurface reflecting point along the boundary with the underlying medium.

4,554,648

ELECTRONIC EARTH SEISMIC NOISE MEASURING METHOD

Charles B. Greer, Lenoir, N.C.; Donald W. Keehan, Fairfax, and John A. Springer, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 165,586, Jul. 3, 1980,. This application Aug. 18, 1982, Ser. No. 409,251
Int. Cl.[4] G01V *1/00*; H04B *11/00*
U.S. Cl. 367—49 **1 Claim**



1. A method for both electronically determining the approximate gross character of the earth's outer crust or soil layer as to general type, depth, and range, and in turn for determining the effect thereof upon transmissivity of background seismic noise therethrough, thus providing a visual readout indication of the soil's effect on the performance of seismic sensor devices, said method being useful to initially set or calibrate any suitable site-adapting seismic sensor device designed to inherently sense soil properties, and being in lieu of time-consuming soil refractometry tests, thus enhancing any seismic sensor device's operation to optimize potential identification of any encroaching vehicle, aircraft or pedestrian traffic which inherently generates seismic signal activity, said method comprising the steps of:

(a) implanting a passive type transducer such as a geophone in the earth's crust, in association with an electronic circuit means coupled to the output of said transducer/geophone which is capable of detecting seismic signature frequency signals from 4–200 hertz;

(b) utilizing the earth's crust which is considered to be a band-pass filter of unknown characteristics and sensing inherent background seismic noise or signature within the earth by use of the transducer/geophone to detect and produce a readout as hereinafter of that seismic noise in the form of resonant frequency within a bandwidth of from 4–200 hertz;

(c) amplifying and filtering the resonant frequency detected by the transducer/geophone

(d) applying said amplified signal to a clipping amplifier to produce a square wave that corresponds to the frequency of said signals produced by said transducer/geophone;

(e) applying the output of said clipping amplifier to trigger a multivibrator;

(f) applying the output signal of said multivibrator to an integrating amplifier to integrate said multivibrator output signal to generate a D.C. signal;

(g) applying the output signal of said integrating amplifier to a frequency meter that is adapted to indicate the frequency of the signal sensed by said transducer/geophone as a visual readout of the resonant frequency of the earth's effect on performance of seismic sensor devices; and

(h) utilizing the sensed data to then adjust or readjust band-pass performance and gain of said site-adapting seismic sensor device to optimize the potential seismic detection.

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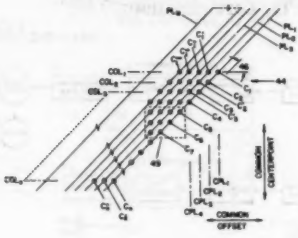
METHOD FOR THE INTERPRETATION OF SEISMIC RECORDS TO YIELD VALUABLE CHARACTERISTICS, SUCH AS GAS-BEARING POTENTIAL AND LITHOLOGY STRATA

Earl F. Herkenhoff, Orinda, and William J. Ostrander, Benicia, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Feb. 1, 1982, Ser. No. 344,892
Int. Cl.⁴ G01V *1/34, 1/36*
U.S. Cl. 367—68 **22 Claims**



1. A method for determining hydrocarbon-bearing potential and/or lithology of strata in the earth using amplitude events in seismic records generated by conventional common centerpoint seismic collection and processing techniques in which presence of refraction energy within said records, has been minimized, comprising the steps of:

(a) generating seismic data by said conventional common centerpoint collection and processing techniques, including recording signals from acoustic discontinuities associated with said strata of interest by positioning and employing an array of sources and detectors such that centerpoints between selected pairs of sources and detectors from a series of centerpoints along a line or survey, said recorded signals being the output of said detectors;

(b) by means of automated processing means, statically and dynamically correcting said recorded signals to form corrected traces whereby each of said corrected traces is associated with a centerpoint horizontally midway between a source-detector pair from which said each corrected trace was originally derived;

(c) by means of automated processing means, indexing said corrected traces so that each of said corrected traces is identified in its relationship to neighboring traces on the basis of progressive changes in common centerpoint location;

(d) for an amplitude event of interest, determining among a series of analytic functions of known mathematical character, a best fit to amplitude vs. horizontal offset variations of a gather of said corrected traces, said best fitting analytic function approximating the amplitude vs. offset form of said amplitude event of interest within said gather wherein the independent variable of said function is horizontal offset and the dependent variable is amplitude, said gather of traces being identified with a common centerpoint location and a set of progressively changing horizontal offset values;

(e) predicting near and far amplitude vs. time trace projections for said gather of corrected traces at new offset locations by substituting one of said new near and far offset locations in said best fitting analytic function as the independent variable and solving said function for the associated dependent amplitude projection thereof, followed by substituting the other of said new offset locations as the independent variable in said best fitting analytic function and solving said function for the dependent associated amplitude projection thereof, said predicted near and far offset trace projections being identified with offset locations falling on opposite sides of said set of changing horizontal offset values;

(f) displaying a first series of said trace projections of step (e) associated with near offset locations, side-by-side with a second series of trace projections also of step (e) associated with far offset locations, said first and second series of displayed traces all being associated with at least the same general common groups of centerpoints so that progressive change in said amplitude event of interest in said displayed traces is identified as a function of progressive change in centerpoint values.

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OIL FILLED TOWED ARRAY HOSE WITHOUT COUPLINGS

Douglas E. Brown, East Lyme, and William Matthews, Baltic, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 2, 1982, Ser. No. 364,818
Int. Cl.⁴ H04R *17/00, 15/00*
U.S. Cl. 367—154 **11 Claims**

1. A continuous, oil filled towed array without intersectional couplings comprising:

a long continuous inner pliable plastic hose having an internal cavity therethrough;

a plurality of conductors wrapped helically around and bonded to the external periphery of said inner pliable plastic hose parallel to a neutral axis thereof;

a plurality of sensors, placed within said inner pliable plastic hose cavity at preselected locations therealong and attached to said conductors in such a fashion as to preclude the need for intersectional couplings;

a long continuous outer pliable plastic hose superposed over and in contact with said inner pliable plastic hose and said plurality of conductors; and

a plurality of longitudinal strength members equally spaced around and embedded within the wall of said outer pliable plastic hose.

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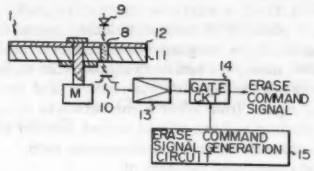
MAGNETO-OPTICAL RECORDING MEDIUM AND METHOD FOR PREVENTING THE ERASING OF THE INFORMATION RECORDED ON THE MAGNETO-OPTICAL RECORDING MEDIUM

Mikio Kanai; Hideki Hatano; Norikiyo Tajiri; Sakashi Ōtaki, and Sigeru Kato, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 2, 1982, Ser. No. 384,674
Claims priority, application Japan, Jun. 4, 1981, 56-086148; Jun. 4, 1981, 56-086149
Int. Cl.⁴ G11B *11/00, 15/04*
U.S. Cl. 369—13 **3 Claims**

1. A magneto-optical recording medium comprising a first side with a vertical magnetization film on which information is recorded, and the medium including a sign indicating whether or not erasing of the information is permitted, said sign com-

prising an optically readable pattern provided on a second side of said recording medium and whose reflectance of light is



different from that of the other portions of the second side of the recording medium.

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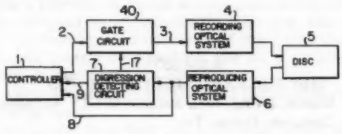
OPTICAL INFORMATION PROCESSOR

Takeshi Maeda, Kokubunji; Yoshito Tsunoda, Mitaka; Takakazu Huno, Tachikawa; Masahiro Takasago, and Yasumitsu Mizoguchi, both of Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 29, 1983, Ser. No. 490,165
Claims priority, application Japan, Apr. 30, 1982, 57-71233
Int. Cl.[4] G11B *7/00*
U.S. Cl. 369—44 **7 Claims**



1. An optical information processor comprising a recording medium which has tracks along each of which predetermined information is optically recorded and reproduced, means for recording including means for modulating the intensity of a light beam and for irradiating said recording medium with the light beam, light receiving means for receiving the light beam after the irradiation of said recording medium thereby, tracking signal generator means for generating on the basis of an output from said light receiving means a tracking signal which reflects a state of trace of one of said tracks by the light beam, and tracking control means for controlling the irradiation position of the light beam on said recording medium in accordance with said tracking signal so that the light beam correctly follows the track, first means for comparing said tracking signal with first and second preset values defining a predetermined range to produce an output signal indicating that said tracking signal departs from said predetermined range, and second means for stopping the intensity-modulation of the light beam in accordance with the output signal of said first means.

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FOCUSING OPTICAL HEAD MOVABLE RADIALLY BY A CARRIAGE

Roland Malissin, and Claude Monlouis, both of Paris, France, assignors to Thomson-CSF, Paris, France

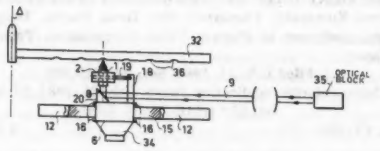
Filed Feb. 28, 1983, Ser. No. 470,380
Claims priority, application France, Mar. 2, 1982, 82 03425
Int. Cl.[4] G11B *7/08, 21/10*
U.S. Cl. 369—45 **25 Claims**

1. A device for controlling access to a track element belonging to a set of adjacent track elements arranged in a reference surface of a data carrier, said device comprising:

an objective lens projecting a light spot for interaction with anyone of said track elements; said objective lens being movable along a first direction perpendicular to said reference surface for controlling the focusing of said spot and along a second direction parallel to said reference surface and transverse to said track elements for controlling said access;

bench means;

carriage means slidably mounted on said bench means for causing said objective lens to displace along said second direction; wherein said objective lens is supported by said carriage means using a lens mount movable along said first direction; and wherein said carriage means comprises a body for supporting said lens mount,



moving coil actuator means secured by said body for generating an electrodynamic force parallel to said second direction;

a plurality of slider contacting areas in frictional relationship with said bench means; and

spring connecting means arranged between said slider contacting areas and said body for enabling, in at least said second direction, a relative motion between said body and said slider contacting areas.

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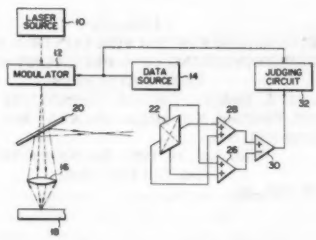
OPTICAL MEMORY DEVICE WITH MEANS FOR DETECTING ERRONEOUS DATA WRITING

Kiichi Kato, Tokyo, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan

Filed Dec. 29, 1982, Ser. No. 454,262
Claims priority, application Japan, Jan. 11, 1982, 57-2494
Int. Cl.[4] G11B *7/00, 27/36*
U.S. Cl. 369—54 **5 Claims**



1. An optical memory device comprising:

a single light beam radiating means for radiating a single recording light beam which is modulated in accordance with recording data;

objective lens means for focusing said recording light beam from said single radiating means onto a recording medium, said recording medium being arranged within a focal plane of said objective lens means, and said recording medium and a focused light beam moving relative to each other;

sensing means for sensing said recording light beam which is focused onto said recording medium and reflected therefrom, said sensing means being arranged in a far field of said objective lens means and being divided into four segments by first and second lines which are symmetrical with respect to a direction of relative movement between said recording medium and said focused recording light beam, said sensing means producing outputs correspond-

ing to the light sensed by said segments of said sensing means;

operating means for calculating a difference between sums of outputs from two pairs of opposing ones of said segments of said sensing means; and

judging means for detecting an erroneous writing operation in accordance with an output from said operating means and said recording data.

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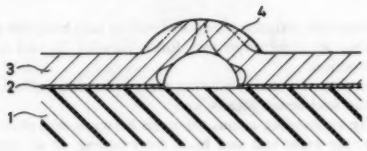
OPTICAL DATA RECORDING DISC AND SYSTEM

Osamu Kumasaka, Yamanashi, and Teruo Touma, Tokyo, Japan, assignors to Pioneer Video Corporation, Yamanashi, Japan

Filed Feb. 23, 1983, Ser. No. 469,053
Claims priority, application Japan, Feb. 24, 1982, 57-28342
Int. Cl.⁴ G11B *25/04, 7/00*
U.S. Cl. 369—275 **10 Claims**



1. An optical data recording disc, comprising:

an optically polished disc;

a gas generated metal layer formed on said disc; and

a protrusion forming layer formed on said gas generating metal layer, said gas generating metal layer being evaporated to produce a gas by an optical beam having an intensity modulated by data, said gas forming protrusions in said protrusion forming layer which are representative of said data, said metal layer acting as an adhesive between said optically polished disc and said protrusion forming layer.

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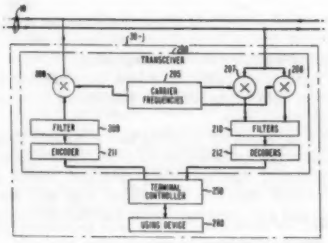
METHOD AND SYSTEM FOR CONTROLLING THE INTERCONNECTING OF A PLURALITY OF LOCAL DATA NETWORKS

Zigmantas L. Budrikis, Dalkeith, Australia, and Arun N. Netravali, Westfield, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 11, 1982, Ser. No. 407,145
Int. Cl.⁴ H04J *3/02*
U.S. Cl. 370—85 **22 Claims**



1. A method for controlling digital signals in a communication system that includes a plurality of home networks, each home network coupling a set of stations assigned thereto, a plurality of said stations having a transmitter, at least a first receiver and a second receiver, a communication path for connecting station second receivers to home networks other than assigned home networks including a plurality of channels each for connecting station second receivers of any of said home networks designated as a source home network to any other of said home networks designated as a destination home network,

each of said plurality of stations including means for coupling signals to its assigned home network through its transmitter, means for receiving signals from its assigned home network through its first receiver and means for receiving signals from other home networks through its second receiver and one of said second receiver to home network channels on said communication path,

said method comprising the steps of:

at a source station coupled to a source home network having its second receiver connectable to a plurality of receiver to home network connecting channels on said communication path, determining the home network of a destination station having at least one receiver to home network connecting channel on said path, and

connecting the second receiver of said source station to said destination home network through one of the receiver to home network connecting channels whereby a station is capable of transmitting on its assigned home network and receiving on another home network.

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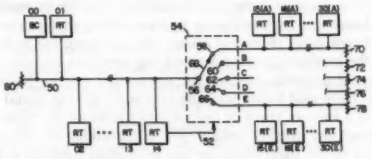
MULTIPLEXED MULTIPLEX BUS

Dayton H. Wilson, Irving, Tex., assignor to LTV Aerospace and Defense Company, Dallas, Tex.

Continuation of Ser. No. 385,350, Jun. 7, 1982, abandoned. This application Feb. 25, 1985, Ser. No. 705,043
Int. Cl.⁴ H04J *3/00, 6/00*
U.S. Cl. 370—85 **18 Claims**



1. A command-response system for multiplexing a multiplex bus comprising:

a half duplex main bus;

a first plurality of remote terminals attached to said main bus, each of said first plurality of remote terminals having a unique address;

a plurality of extended half duplex buses;

a second plurality of remote terminals attached to each of said extended buses, each of said second plurality of remote terminals in each of said extended buses having a unique address within an individual one of said extended buses corresponding to an identical address in each of the remaining of said extended buses;

means for selectively connecting one of said extended buses to said main bus;

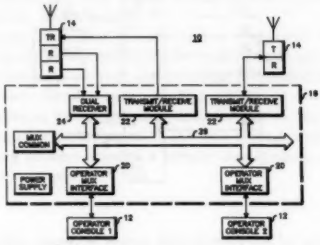
means for controlling said connecting means; and

a command-response bus controller for directing traffic on said main bus and for controlling said controlling means directly under random access, non-syhchronous control, such that one of said extended buses can be selected, said extended buses and said main bus being operable in half duplex mode.

4,554,658
SYSTEM FOR PRODUCING ENCODED AND DECODED VOICE, INTERNAL AUDIO TONES, AND DATA COMMUNICATION WITHIN A TIME DIVISION MULTIPLEX NETWORK

Russell A. Marten, Schaumburg, and Greg M. Townsend, Palatine, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 7, 1983, Ser. No. 511,682
Int. Cl.[4] H04J *3/02, 3/12*
U.S. Cl. 370—85 **29 Claims**



1. A remote site interface apparatus for use in a network of the type including a time-division multiplex (TDM) bus for carrying a plurality of digital audio signals and digital control packets assigned to an identifiable time slot, said apparatus providing encoding and decoding of the TDM digital audio signals and control data packets, and for generating control tone signals, said apparatus comprising:

decoding means for converting a TDM digital audio to an analog signal;

control means including tone generating means adapted for providing a digitized tone signal and;

select means responsive to said control means for selectively coupling said decoding means to said bus or to said tone generating means; whereby,

when said select means couples said decoding means to said bus, said apparatus outputs said analog audio signal, and when said select means couples said decoding means to said tone generating means, said apparatus outputs an analog tone signal.

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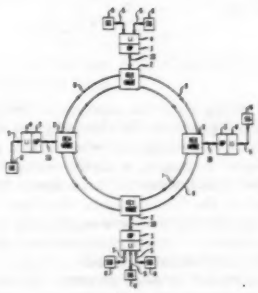
DATA COMMUNICATION NETWORK

Mark L. Blood, Columbus; Joseph W. Darnell, Gahanna; Allen D. Fergeson, Johnstown, and David M. Rouse, Whitehall, all of Ohio, assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 12, 1983, Ser. No. 560,166
Int. Cl.[4] H04J *3/00*
U.S. Cl. 370—88 **24 Claims**



1. A node (2) for coupling a data bus (23) with ring transmission paths (0,1) to form a network enabling communication between data systems (6) coupled with the data bus characterized in that

said node comprises

means (211) enabled by predefined data appearing at first data rates on the data bus and incoming ones of the ring transmission paths for defining node disposition of data as it appears on the data bus and incoming ring transmission paths and generating a disposition available signal,

means (210) coupled with the ring transmission paths and data bus for receiving and temporarily storing data, and one of said

means (212) responsive to a first predefined data appearing at an output of said receiving and temporarily storing means and enabled by said generated disposition available signal for controlling the node to receive the data and propagate the received data on the data bus and outgoing ones of the ring transmission paths at second data rates independent of said first data rates in accordance with said defined node disposition.

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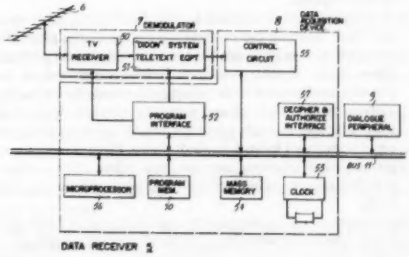
ONE-WAY DATA TRANSMISSION SYSTEM

Yves M. Noirel, Montfort; Jean-Claude Vardo, St. Gregoire, and Gérard Cheveé, Rennes, all of France, assignors to L'Etat Francais, represente par le Ministre des P.T.A. (Centre National d'Etudes des Telecommunications CNET) and Etablissement Public de Diffusion dit "Telediffusion de France", both of, France

Filed Oct. 14, 1982, Ser. No. 434,531
Claims priority, application France, Oct. 15, 1981, 81 19789
Int. Cl.[4] H04J *3/00*
U.S. Cl. 370—94 **9 Claims**



1. A one-way broadcasting transmission system for teletext data stored in a data base bank file, said system comprising a transmitter station connected to a one-way digital data transmission support channel, and a plurality of data receiver sets which receive data that is transmitted over said channel, said transmitter station having means for acquiring data from the data bank file which is to be transmitted, means for formatting the acquired data into data packets and groups for presenting and broadcasting the information delivered from the data bank via said transmission support channel, each of said data receiver sets having demodulating means for receiving the data transmitted over the transmission support channel, data acquisition means comprising a memory means for storing the received file of data information, and dialogue peripheral means coupled to said memory means for exploiting the data information stored in said memory, wherein each receiver set further comprises microprocessor means in the data acquisition means, a data bus, programmed memory means and programming interface means coupled to said data bus, said programming interface means also being coupled to the demodulation means, data packet and group processing means having an output coupled to the data bus, and RAM memory means coupled to the data bus to store all of the transmitted data files, the dia-

logue peripheral means also being coupled to the data bus for consulting access to the data files stored in said RAM memory.

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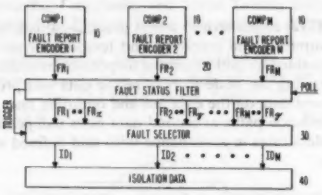
GENERALIZED FAULT REPORTING SYSTEM

Richard J. Bannister, Newtown Square, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 31, 1983, Ser. No. 547,339
Int. Cl.[4] G01R *31/28*
U.S. Cl. 371—15 **15 Claims**



1. A fault reporting system for isolating faults to a particular circuit element or elements based upon error signals detected therefrom comprising in combination:

fault encoder means coupled to each circuit element for encoding the detected error signals in accordance with a predetermined classification of fault sources, said fault encoder means providing respective fault reports for the circuit elements based upon said classification,

fault status filter means coupled to said fault encoder means for receiving said fault reports and for comparing each current report with the preceding report for the same circuit element, said fault status filter means generating a trigger signal in response to a difference in the last mentioned reports,

fault selector means coupled to said fault status filter means, said fault selector means being comprised of a plurality of logic circuits which are divided into a plurality of partitions, each of said partitions being comprised of logic circuits conforming to the electrical connectivity between a given circuit element and any other circuit element, said logic circuits in each partition receiving respective fault reports derived from said fault status filter means for said given circuit element and for any other circuit element coupled thereto which receives an external output therefrom,

said trigger signal generated by said fault status filter means being applied to said logic circuits in each partition, said logic circuits providing an isolation data output signal level in response to said trigger signal which is indicative of the presence of a fault in said given circuit element.

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INPUT SIGNAL TESTING DEVICE FOR ELECTRONIC COPIER

Takanobu Suzuki; Kenichiro Nakayama; Izumi Takahashi, and Terumasa Sugiyama, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

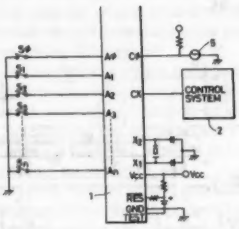
Filed Jul. 15, 1982, Ser. No. 398,466
Claims priority, application Japan, Jul. 15, 1981, 56-109217
Int. Cl.[4] G06F *11/00*
U.S. Cl. 371—20 **3 Claims**

1. An input signal testing device for an electronic copier, comprising: 'a control section for controlling the operations of various sections of said copier;

a plurality of detectors providing input signals to said control section, controlled by said control section and located at said various sections of said copier;

means for displaying a number of copies to be made, controlled by said control section;

a test switch, which when actuated, causes said control section to operate in a test mode to test a plurality of said input signals, wherein said control section, in said test mode, effects changes in said various sections to thereby change said detectors, checks variations in input signals inputted from said detectors before and after said changes in the various sections, and controls said display means to indicate with one signal any abnormality in the results of said checking of said plurality of detectors when said test switch is actuated; and



a plurality of interconnection means between said control section, said detectors, said displaying means and said test switch; wherein said control section receives

from said plurality of detectors a corresponding plurality of sets of at least a first input signal and a second input signal at different times on the same interconnection means for each set; and

said control section further comprises means for comparing said first and second input signals in each set to detect an abnormality.

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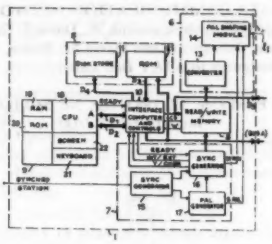
DEVICE AND APPARATUS FOR TESTING ELECTRONIC EQUIPMENT AND PARTICULARLY TELEVISION EQUIPMENT

Luc Pham van Cang, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 16, 1983, Ser. No. 476,020
Claims priority, application France, Mar. 19, 1982, 82 04754
Int. Cl.[4] G01R *31/28*
U.S. Cl. 371—20 **18 Claims**



1. A device for testing electronic equipment, comprising:

an analog test signal generator for providing test signals for testing said electronic equipment wherein said generator includes a digital computer, a digital-analog converter coupled to said digital computer and a means for storing said test signals in the form of digital signals;

a device for the acquisition of a signal supplied by said tested electronic equipment in response to said test signals received by said tested equipment; and

display means controlled by said computer for the purpose of displaying the signals transmitted the test signal generator and the signals received by the acquisition device, wherein

said digital computer includes a microprogrammed processing unit for producing said digital signals which microprogrammed processor unit includes a calculation means, said digital computer further comprising a means for storing signal descriptors wherein said means for storing signal description is addressed by a keyboard through said digital computer, a means for storing program instruction sequences, a means for storing data for obtaining said digital signals, a means for transferring said stored samples and said means for transferring further including a means for transferring said digital signals to said digital-analog converter and wherein

said signal descriptor storage means comprises, for each descriptor, a zone indicating the type of descriptor, a zone for storing the starting address of the instruction sequence to obtain samples corresponding to said descriptor, address zones for an operating area for storing the parameters relative to the signal in the data storage means and a starting address zone of a sample arrangement area into the storage means.

4,554,664

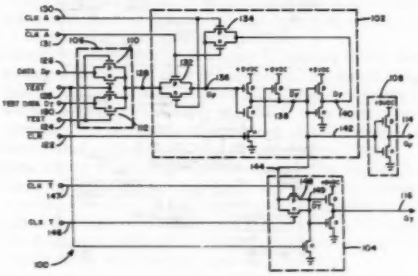
STATIC MEMORY CELL WITH DYNAMIC SCAN TEST LATCH

Dale E. Schultz, Burnsville, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Oct. 6, 1983, Ser. No. 539,599

Int. Cl.⁴ G01R *31/28*; G06F *11/00*

U.S. Cl. 371—25 **3 Claims**



1. A level sensitive scan design latch cell comprising:

a static functional latch;

a data selector;

means for coupling said data selector to said static functional latch;

a dynamic test latch;

means for coupling said static functional latch to said dynamic test latch;

means for coupling successive bits of a serial string of test data bits to said data selector;

means coupled to said data selector for gating said successive bits of a serial string of test data bits from said data selector to said static functional latch and then to said dynamic test latch for being serially output by said dynamic test latch.

4,554,665

RADIO RECEIVER INCORPORATING A DATA OPERATED SQUELCH SYSTEM

Graham E. Beesley, Basingstoke, England, assignor to Motorola, Inc., Schaumburg, Ill.

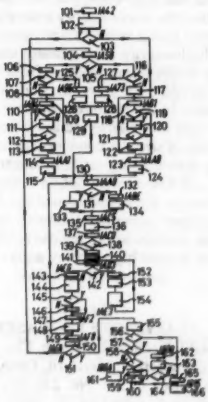
PCT No. PCT/GB82/00159, § 371 Date Feb. 7, 1983, § 102(e) Date Feb. 7, 1983, PCT Pub. No. WO82/04513, PCT Pub. Date Dec. 23, 1982

PCT Filed May 28, 1982, Ser. No. 465,867

Claims priority, application United Kingdom, Jun. 16, 1981, 8118533

Int. Cl.⁴ G06F *11/10*

U.S. Cl. 371—55 **7 Claims**



1. A radio receiver comprising in combination:

receiving means for receiving a digitally coded radio signal in which the code format has a pattern that provides a plurality of zero crossings;

decoding means for decoding a received signal fed from the receiving means and producing a signal representative of the difference between the duration of a preselected interval between zero crossings expressed as a ratio to a predetermined bit period, and a predetermined integer value of the said ratio;

means for switching at least part of the receiver between a quiescent and an active state in dependence upon the value of the integrated signal.

4,554,666

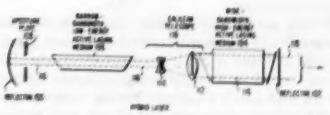
HIGH-ENERGY, SINGLE LONGITUDINAL MODE HYBRID LASER

Wolf P. Altman, Richboro, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 24, 1982, Ser. No. 444,454

Int. Cl.⁴ H01S *3/098*

U.S. Cl. 372—19 **9 Claims**



1. In a hybrid laser comprised of two spaced reflectors forming a given resonant cavity capable of supporting wave energy within a certain frequency band, and a relatively wide aperture, high-energy active lasing medium and a relatively narrow aperture, low-energy active lasing medium situated in

serial relationship with one another within said given resonant cavity, said high-energy active lasing medium having a first bandwidth within said certain frequency band which first bandwidth is sufficiently wide to support a plurality of longitudinal oscillation modes of said wave energy and said low-energy active lasing medium having a second bandwidth within said first bandwidth which is sufficiently narrow to support only a single one of said plurality of longitudinal oscillation modes of said wave energy; the improvement wherein said hybrid laser further comprises:

means for achieving high energy in a single longitudinal mode from said hybrid laser, said means including a Galilean telescope situated within said given resonant cavity and located in between said low-energy active lasing medium and said high-energy active lasing medium (1) for concentrating the wave energy emerging from said high-energy active lasing medium and traveling in a direction from said high-energy active lasing medium toward said low-energy active lasing medium from the relatively wide aperture occupied thereby in said high-energy active lasing medium to the relatively narrow aperture occupied thereby in said low-energy active lasing medium and (2) for expanding in size the wave energy emerging from said low-energy active lasing medium and traveling in a direction from said low-energy active lasing medium toward said high-energy active lasing medium from the relatively narrow aperture occupied thererby in said low-energy active lasing medium to the relatively wide aperture occupied thereby in said high-energy active lasing medium.

4,554,667

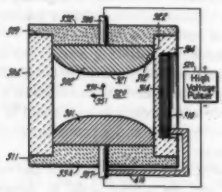
SEALED-OFF CO_2 LASER

Walter R. Kaminski, North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 256,282, Apr. 23, 1981, abandoned. This application Oct. 27, 1983, Ser. No. 546,134

Int. Cl.⁴ H01S *3/02, 3/097*

U.S. Cl. 372—83 **6 Claims**



1. A TEA CO_2 laser having a CO_2 laser gain medium and bounded by a sealed-off enclosure having an optic axis and a traverse axis and having first and second end members disposed perpendicular to said optic axis, first and second side members and first and second cover members, said side members and cover members being disposed parallel to said optic axis and together surrounding said axis, all of said members being formed from the same material;

said laser further including reflective optical elements disposed along said optic axis and defining an optical cavity therebetween for resonating optical radiation within said gain medium;

including anode and cathode electrodes disposed on opposite sides of the interior of said enclosure parallel with said optic axis and a predetermined electrode distance along said transverse axis and being separated by said side members, said anode electrode having a curved surface facing said cathode electrode and planar wall surfaces abutting said side members, said curved surface and said planar wall surfaces meeting in a transition area having a radius of curvature of at least 0.003 inches;

said laser further including at least one extra-cavity electrode electrically connected to said cathode electrode by means of a low-inductance lead and being mounted along the outer surface of one of said side members overlapping said anode electrode along said transverse axis in such a manner that the shortest straight line between said anode and said extra-cavity electrode in a plane perpendicular to said transverse axis passes through a portion of said laser medium and also through a layer of insulating material in the form of a portion of said enclosure wall; and means for applying pulsed high voltage to said anode and cathode electrodes, said voltage having a rise time of at least 30 nanoseconds and a peak value such that a field of at least 18 kv/cm is produced between said anode and cathode electrodes, whereby a corona discharge is formed between said anode and said extra-cavity electrode which pre-ionizes the CO_2 medium between said anode and cathode electrodes.

4,554,668

FREQUENCY-HOPPING RADIO COMMUNICATIONS SYSTEM

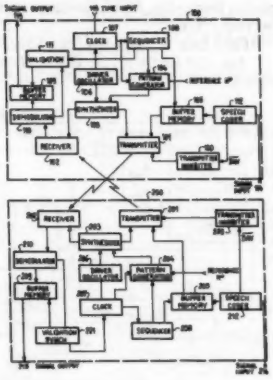
Pierre Deman, and Henri Butin, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 20, 1983, Ser. No. 496,564

Claims priority, application France, May 27, 1982, 82 09258

Int. Cl.⁴ H04B *7/12*

U.S. Cl. 375—1 **12 Claims**



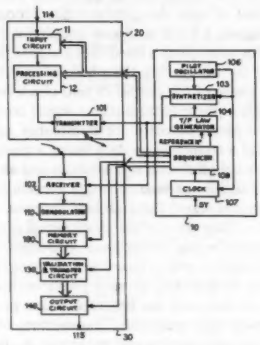
1. A radio communications system comprising at least one master station and a plurality of slave stations, wherein information to be transmitted between said stations is in digital form, wherein a two-way link between any of said slave stations and a master station is established over a frequency-hopping channel in which transmission takes place in bursts of predetermined duration at different frequencies with said frequency-hopping channel being determined by a frequency-hopping pattern which is associated with each slave station, each slave station having an independent frequency-hopping pattern associated therewith and all of said frequency-hopping channels using frequencies selected from a pool of frequencies common to all of said channels, and wherein useful transmission bursts are synchronized for the system as a whole with each slave station being synchronized from data received from a master station.

4,554,669

FREQUENCY JUMP RADIOCOMMUNICATIONS SYSTEM WITH INTERBURST REDUNDANCY

Pierre Deman, and Henri Butin, both of Paris, France, assignors to Thomson CSF, Paris, France

Filed Jun. 13, 1983, Ser. No. 503,598
Claims priority, application France, Jun. 18, 1982, 82 10709
Int. Cl.[4] H04B 7/12; H04L 1/08
U.S. Cl. 375—1 4 Claims



1. A radiocommunications system for transmitting packets of digitized data between a fixed central station and a plurality of subscriber stations using a set of frequencies common to all said stations, each one of said plurality of subscriber stations being assigned at least one frequency law which is independent from frequency laws assigned to other subscriber stations, said fixed central station being assigned all of the frequency laws in said system, each one of said fixed central station and said subscriber stations comprising:

input means for receiving an input signal and for providing a succession of compressed packets of digitized data corresponding to said input signal;

processing means, connected to said input means, for calculating and inserting redundancy data into said succession of compressed packets of digitized data;

transmitter means, connected to said processing means and having a plurality of carrier frequencies, for transmitting said packets of digitized data and said redundancy data in a sequence of bursts variable in number, each burst corresponding to a brief transmission of one of said plurality of carrier frequencies modulated by said digitized data;

means, connected to said transmitter means, for varying by steps the transmitter carrier frequency at each said transmission according to the frequency law assigned to the subscriber station to which said transmission is directed, the frequency steps for all of said subscriber stations are synchronous and have the same duration; and

reception means for receiving said transmitted packets of digitized data and for producing an output signal, including:

receiving means for receiving said transmitted packets of digitized data and said redundancy data;

demodulator means, connected to said receiving means, for demodulating the received packets of digitized data and said redundancy data;

memory means, connected to said demodulator means, for storing the demodulated data;

validation means, connected to said memory means, for validating said demodulated data, including comparator means for comparing said demodulated data with the associated redundancy data, whereby said demodulated data is validated when said redundancy data is that data which was inserted into the associated packet of digitized data; and

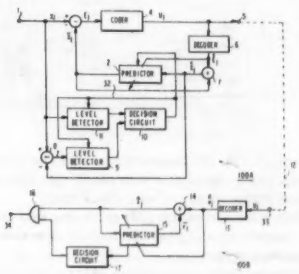
output means, connected to and controlled by said validation means, for outputting a signal containing the validated, demodulated data.

4,554,670

SYSTEM AND METHOD FOR ADPCM TRANSMISSION OF SPEECH OR LIKE SIGNALS

Shinichi Aiko; Rikio Maruta, and Takao Nishitani, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 13, 1983, Ser. No. 484,676
Claims priority, application Japan, Apr. 14, 1982, 57-63032; Apr. 14, 1982, 57-63033; Apr. 14, 1982, 57-63034
Int. Cl.[4] H03K 13/22
U.S. Cl. 375—30 14 Claims



1. An ADPCM transmission system comprising:

a transmitter having coding means including a subtractor for providing a difference E_j between an input signal X_j and a first predicted signal X_j, a coder for coding said difference E_j given from said subtractor into a coded signal U_j, a first decoder for obtaining a first reproduced error signal E_j by decoding said coded signal U_j given from said coder, and first prediction means for generating said first predicted signal X_j on the basis of said first reproduced error signal E_j from said first decoder; means for producing a locally decoded signal X_j in response to said first reproduced error signal E_j and said first predicted signal X_j, and first control means for controlling said first prediction means in response to said input signal X_j and a difference signal representing the difference between said input signal X_j and said locally decoded signal X_j; and

a receiver having decoding means including a second decoder for receiving said code U_j supplied from said transmitter and decoding said received code U_j into a second reproduced error signal e_j, second prediction means for producing a second predicted signal x_j on the basis of said second reproduced error signal e_j from said second decoder, means for producing a decoded signal x_j in response to said second reproduced error signal e_j and said predicted signal x_j, and second control means for controlling said decoded signal x_j in response to a signal produced by said second prediction means.

4,554,671

DELTA MODULATED COMMUNICATION SYSTEM

Galen R. Collins, San Jose, Calif., assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 4, 1983, Ser. No. 548,804
Int. Cl.[4] H03K 13/22
U.S. Cl. 375—30 8 Claims

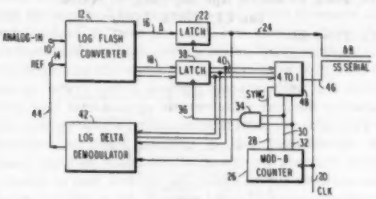
1. A digital communication system for an analog signal, comprising:

a companded A/D converter (12) for comparing said analog signal against a reference signal, said companded converter comprising a flash converter including a plurality of comparators (70-96) each receiving said analog signal

and a signal derived from said reference signal, said converter outputting a step-size signal indicating the magnitude of the difference between said analog signal and said reference signal and a delta signal indicating the sign of said difference, said step size being companded, with the smallest step size associated with the smallest difference;

a clock outputting a clock signal (**20**) at a clock rate;

delta data selection means (**22**) receiving said clock signal and said delta signal for outputting a digital transmitted delta signal at a clock rate;



a step clock (**26, 34**) connected to said clock and outputting a step clock signal at a step clock rate that is a predetermined subharmonic of said clock rate;

step data selection means (**38**) receiving said step-size signal for outputting a digital transmitted step-size signal at the step clock rate;

a companded delta demodulator (**42**) receiving said transmitted delta signal and said transmitted step-size signal for outputting an analog transmitted amplitude signal determined by the present and past transmitted delta and step-size signals, said transmitted amplitude signal being used as said reference signal.

4,554,672

PHASE AND FREQUENCY VARIABLE OSCILLATOR

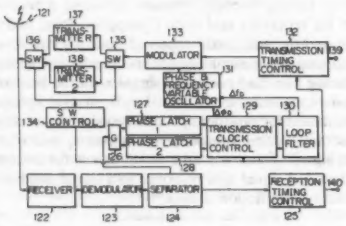
Tatsuro Masamura; Masahiro Morikura, both of Kanagawa, and Takayoshi Maki, Fukuoka, all of Japan, assignors to Nippon Telegraph & Telephone Public Corp., Tokyo, Japan

Filed Feb. 21, 1984, Ser. No. 582,215

Claims priority, application Japan, Feb. 21, 1983, 58-26340; Nov. 15, 1983, 58-213298

Int. Cl.⁴ H04B *7/02;* **H03L** *7/00*

U.S. Cl. 375—40 **5 Claims**



2. A non-blocking redundant switching system in a clock coherent satellite communication system comprising,

an earth station having an antenna, a receiver coupled to said antenna, primary and secondary transmitters, a switching means for switching on one of said transmitters, a demodulator coupled with said receiver, a separator coupled with said demodulator to extract a phase error signal from a received data burst, a pair of latch circuits coupled to said separator for holding phase error signals from said separator for said primary and secondary transmitters, respectively, a phase and frequency variable oscillator for providing a controlled clock signal according to the output of a selected one of said latch circuits, a modulator receiving the output of said phase and frequency variable oscillator for modulating a transmission data signal and applying the modulated signal to one of said transmitters also coupled the said antenna,

a satellite station having an antenna, primary and secondary receivers coupled with said antenna, a switching means for switching on one of said receivers, a regenerative repeater having a demodulator coupled with the output of said receiver, a clock recovery circuit coupled with the output of said receiver, and a decision circuit coupled to the output of said demodulator for recognizing the received signal, a fixed oscillator coupled with said decision circuit for providing a fixed clock signal thereto, a phase detector for comparing the phase of said fixed oscillator and the phase of the output of said clock recovery circuit to provide a phase error signal, a signal combiner coupled with said phase detector for combining said phase error signal and a transmission data burst, a transmitter having an output coupled with said antenna and an input coupled with said signal combiner through a modulator to transmit the combined signal through said antenna,

wherein the phase error of the clock signal of said controlled clock signal for the primary and secondary transmitters in an earth station, and primary and secondary receivers on a satellite is detected by said phase comparator in said satellite station, and the detected phase error signals for the primary and secondary transmitters or receiver are sent to the earth station and are stored in the primary and secondary latch circuits, respectively, and said latch circuit are switched simultaneously with the switching of the transmitters or receivers, and wherein said phase and frequency variable oscillator comprises (a) a fixed oscillator, (b) a quadrature hybrid circuit coupled with the output of said fixed oscillator for providing a pair of quadrature phased signals, (c) a first control input for accepting a frequency control signal (Δf_D), (d) a second control input for accepting a phase control signal ($\Delta\phi_D$), (e) a control signal generator for providing a pair of quadrature phased control signals which depend upon said frequency control signal (Δf_d) and said phase control signal ($\Delta\phi_D$), (f) a first mixer for providing a product of one of the outputs of said quadrature hybrid circuit and one of the outputs of said control signal generator, (g) a second mixer for providing a product of another output of said quadrature hybrid circuit and another output of said control signal generator, (h) a power combiner for providing in-phase combination of outputs of said first mixer and said second mixer, and (i) an output terminal coupled with said power combiner to provide a controlled output signal.

4,554,673

SEQUENTIAL DATA TRANSMISSION SYSTEM WITH RESYNCHRONIZATION

Reginald W. Stevens, Stockport, England, assignor to International Computers Limited, London, England

Filed Feb. 17, 1983, Ser. No. 467,305

Claims priority, application United Kingdom, Feb. 19, 1982, 8205015

Int. Cl.⁴ H04J *3/06*

U.S. Cl. 375—118 **6 Claims**

1. A data transmission system comprising

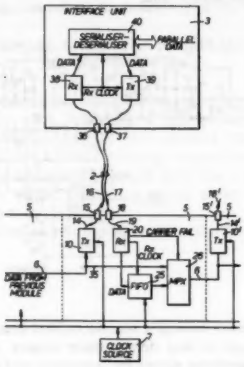
(a) a plurality of interface units, each comprising input means for receiving an input self-clocking signal and recovering a local clock signal and an input data signal therefrom, and output means for combining the recovered lock clock signal with an output data signal to produce an output self-clocking signal,

(b) clock means for generating a master clock signal,

(c) a plurality of resynchronisation means each connected to the clock means to receive the master clock signal, each resynchronisation means comprising means for receiving an input self-clocking signal and for resynchronising it to

produce an output self-clocking signal synchronised to the master clock signal, and

(d) data transmission means for connecting the interface units and resynchronisation means together in series, with each resynchronisation means positioned between a different pair of interface units in said series, the output self-



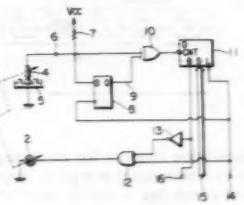
clocking signal of each interface unit in said series being connected to the next resynchronisation means in the series to provide said input self-clocking signal therefor, and the output self-clocking signal of each resynchronisation means being connected to the next interface unit in the series to provide said input self-clocking signal therefor.

4,554,674

APPARATUS FOR DETECTING THE AMOUNT OF MOVEMENT OF A MEMBER TO BE CONTROLLED

Shinji Sakai, Yokohama; Takashi Kawabata, Kamakura, and Yoshihito Harada, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 23, 1983, Ser. No. 506,999
Claims priority, application Japan, Jul. 6, 1982, 57-118232
Int. Cl.⁴ G03B *7/00*; G01B *7/00*
U.S. Cl. 377—17 **13 Claims**



1. A movement amount detecting apparatus having a monitor signal source for forming a pulse signal in association with movement of an associated member to be controlled, said apparatus being for detecting the pulse signal from said monitor signal source and thereby detecting the amount of movement of said associated member to be controlled, said apparatus including:

(a) discriminating means for discriminating the initial state of said monitor signal source;

(b) a detecting circuit for detecting said pulse signal and obtaining information corresponding to the amount of movement of said associated member to be controlled; and

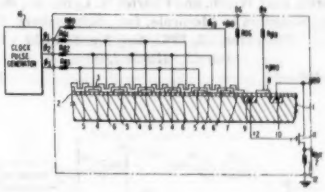
(c) a mode determining circuit for determining, on the basis of the result of the discrimination of said discriminating means, the pulse signal detecting operation for said pulse signal to any one of a rising pulse detecting mode and a falling pulse detecting mode.

4,554,675

CHARGE TRANSFER DEVICE OPERATIVE AT HIGH SPEED

Kazuo Miwada, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1982, Ser. No. 450,177
Claims priority, application Japan, Dec. 16, 1981, 56-202850
Int. Cl.⁴ G11C *19/28*; H01L *29/78*
U.S. Cl. 377—60 **12 Claims**



1. A charge transfer device on a semiconductor substrate comprising:

a plurality of input terminals receiving clock pulses;

a plurality of first resistors each connected with a corresponding one of said input terminals;

a plurality of first signal lines each connected with a corresponding one of said first resistors;

a plural set of transfer gates disposed in a line such that a predetermined order of said sets is repeated, said transfer gates in each of said sets, except for a final stage transfer gate, being connected with corresponding ones of said first signal lines to receive corresponding ones of said clock pulses;

a second resistor having one end connected with one of said input terminals;

a second signal line inserted between the other end of said second resistor said said final stage transfer gate, said second signal line being physically separated from said first signal lines; and

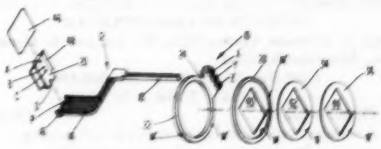
a detection means disposed adjacent to said final stage transfer gate for producing an output signal in response to charges transferred thereinto from a region of said semiconductor substrate under said final stage transfer gate.

4,554,676

DENTAL AIMING DEVICE

Robert Maldonado, Santa Clara, and Clark E. Loughry, San Jose, both of Calif., assignors to The S. S. White Company, Holmdel, N.J.

Filed Mar. 16, 1983, Ser. No. 475,824
Int. Cl.⁴ A61B *6/14*
U.S. Cl. 378—170 **12 Claims**



1. A dental aiming device comprising:

an alignment member having film holding means at one end and an aligning arm at its other end with a biteplate inter-

mediate thereof, said arm being offset with respect to said film holding means and said bite plate;

a film holder slideably adjustable in a vertical direction within said film holding means;

an alignment ring adjustably mounted to said aligning arm for slidable movement thereon;

a plate holder rotatably mounted to said alignment ring; and

an x-ray opaque plate mounted to said plate holder, said plate holder and said x-ray opaque plate each having an aligned centrally disposed aperture therein of identical configuration.

4,554,677

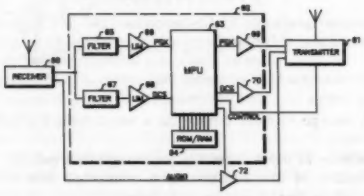
QUEUED COMMUNITY REPEATER CONTROLLER

Paul F. Smith, Fort Worth; Eric Schorman, Bedford; Timothy M. Burke, Fort Worth, and Charles N. Lynk, Jr., Bedford, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1983, Ser. No. 564,634

Int. Cl.[4] H04B *1/00*

U.S. Cl. 455—54 **17 Claims**



1. A central controller for a single channel communications system regulating access by a plurality of remote units to the single channel, each remote unit associated with one of a plurality of predetermined groups of remote units and each remote unit adapted to request service on the channel and, after permission is granted, to transmit a message on the channel, comprising:

means for detecting an end-of-transmission condition of a first remote unit of a first group;

means, responsive to said end-of-transmission condition detection, for establishing a period of time on the single communications channel during which a remote unit of a second group may request service;

means for processing a received second group remote unit request for service;

storage means for storing said processed remote unit request in a queue with other remote unit requests;

means for maintaining a grant of service to said first group following said period of time whereby a second remote unit of said first group may transmit;

means for revoking said first group grant of service if said second remote unit does not transmit; and

means for granting said request for service of said second group remote unit in accordance with a priority in said storage means when said first group grant of service is revoked.

4,554,678

WIRELESS RECEIVER HAVING CRYSTAL FILTER AT OUTPUTS OF PREAMPLIFIER

George A. Bowman, Vernon Hills, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 13, 1982, Ser. No. 449,349

Int. Cl.[4] H04B *1/26*

U.S. Cl. 455—286 **13 Claims**

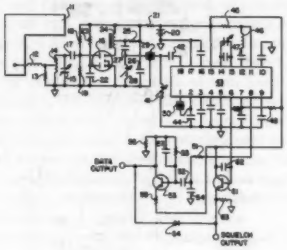
1. A wireless superheterodyne receiver comprising:

an antenna for receiving wireless transmissions;

preamplifier means having an input connected to said antenna and having an output;

crystal filter means having an input connected to the output of said preamplifier means and having an output, said crystal filter means having a first crystal tuned to the frequencies of the wireless transmissions, said crystal filter means comprising means for operating said first crystal in its third overtone mode;

demodulator means having an input connected to the output of said crystal filter means, said demodulator means having a single mixer; and,



oscillator means having a second crystal connected to said single mixer of said demodulator means, said oscillator means comprising means for operating said second crystal in its fundamental vibration mode,

wherein said demodulator means supplies at an output a demodulated signal based upon said wireless transmission.

4,554,679

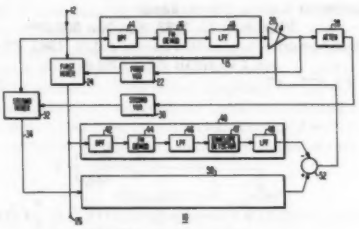
NOISE REDUCTION SYSTEM FOR A SINGLE SIDEBAND MULTIPLEX SIGNAL

Leonard N. Schiff, Lawrenceville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 15, 1983, Ser. No. 551,922

Int. Cl.[4] H04B *1/10*

U.S. Cl. 455—303 **6 Claims**



5. In a communication receiver for processing a received signal modulated by a pilot signal at a given frequency and an information signal occupying a certain band of frequencies separated from said given frequency, a noise reduction apparatus comprising:

a first means for detecting modulation on said pilot signal present in said received signal;

means for generating a signal having a frequency which varies in response to the amount of modulation detected on said pilot signal;

means for mixing the generated signal with the received signal so that the frequencies of the two signals combine to produce an output signal which is lower in frequency than said received signal;

a second means for detecting modulation on the pilot signal present in said output signal; and

means for varying the amplitude of the detected modulation from the first means for detecting modulation in response

to the output of the second means for detecting modulation.

4,554,680

THREE DIODE BALANCED MIXER

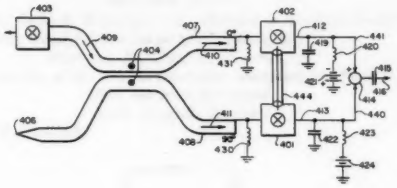
Harold Jacobs, West Long Branch, and Samuel Dixon, Jr., Neptune, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 1, 1983, Ser. No. 519,154
Int. Cl.[4] H04B *1/26*
U.S. Cl. 455—326 **7 Claims**

1. A mixer device comprising, in combination:

three cavities, each including a self-oscillating negative resistance device, two of said cavities being injection locked together by a connecting means said connecting means being adjustable in length such that it is compatible with a 180° phase difference which exists between the locked together cavities;

means to feed an output signal from the third of said cavities to the two injection locked cavities as an input signal thereto;



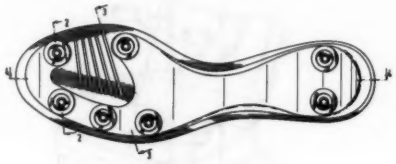
means for outputting signals from the negative resistance devices in the injection locked cavities; and

means for combining these signals to form a mixed signal.

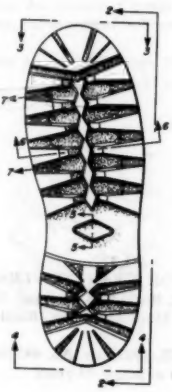
DESIGNS

NOVEMBER 19, 1985

281,370
SOLE FOR A SPORTS SHOE
Simon J. Peel, Huddersfield, England, assignor to Benjamin Crook & Sons Limited, West Yorkshire, England
Filed Sep. 9, 1983, Ser. No. 530,817
Claims priority, application United Kingdom, Mar. 11, 1983, 1 011 938
Term of patent 14 years
U.S. Cl. D2—319



281,371
SHOE SOLE
Delton W. Young, Belmont, Mass., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 2, 1983, Ser. No. 471,571
Term of patent 14 years
U.S. Cl. D2—320



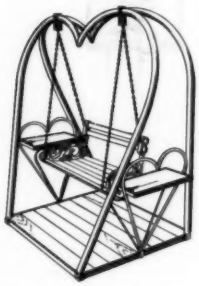
281,372
SOLE FOR FOOTWEAR
Giuseppe Sironi, Albizzate, Italy, assignor to Vibram S.P.A., Albizzate, Italy
Filed Mar. 3, 1983, Ser. No. 471,716
Claims priority, application Italy, Oct. 21, 1982, 23251/82[U]
Term of patent 14 years
U.S. Cl. D2—320

281,373
BOXING GLOVE
John C. Golomb, Brooklyn, N.Y., assignor to Everlast World's Boxing Headquarters Corporation, Bronx, N.Y.
Filed Jul. 21, 1983, Ser. No. 515,772
The portion of the term of this patent subsequent to May 29, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D2—361

281,374
NEEDLEWORK FRAME
Albert Mazeika, Tucson, Ariz., assignor to Needlepointer, Tucson, Ariz.
Filed Jun. 1, 1983, Ser. No. 500,006
Term of patent 14 years
U.S. Cl. D3—26

281,375
TOOTHBRUSH
Kosta Konjovic, 28 bis, rue Sergent Godefroy, 93100 Montreuil s/bois, France
Filed Jun. 20, 1983, Ser. No. 505,810
Claims priority, application France, Dec. 29, 1982, 82 4585
Term of patent 14 years
U.S. Cl. D4—104

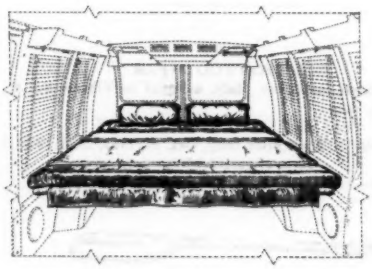
281,376
SWING
James C. Gregory, III, 4314 W. 54th Ter., Shawnee Mission, Kans. 66205
Filed May 16, 1983, Ser. No. 494,717
Term of patent 14 years
U.S. Cl. D6—344



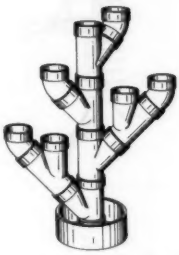
281,377
CHAIR
Charles A. Gibilterra, 12722 Tyson Pl., Granada Hills, Calif. 91344
Filed Mar. 15, 1983, Ser. No. 462,947
Term of patent 14 years
U.S. Cl. D6—362

281,378
GLIDER
Paul H. Parker, Box 132 R.F.D., Poultney, Vt. 05764
Filed Mar. 31, 1983, Ser. No. 480,747
Term of patent 14 years
U.S. Cl. D6—379

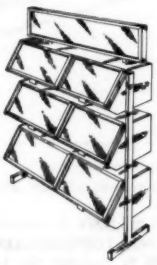
281,379
SOFA BED FOR A VAN CONVERSION
Robert O. Isham, Rte. 2, Box 136-B, Decatur, Tex. 76234, and Wayne S. Reese, 7201 Hovenkamp Ave., Richland Hills, Tex. 76118
Filed Apr. 25, 1983, Ser. No. 487,980
Term of patent 14 years
U.S. Cl. D6—382

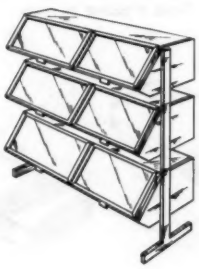


281,380
PLANTER
Carl R. Smith, Waco, Tex., assignor to Weststar Marketing, Inc., Waco, Tex.
Filed Dec. 19, 1983, Ser. No. 563,284
Term of patent 14 years
U.S. Cl. D6—404

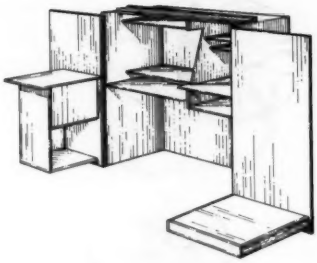


281,381
DISPLAY FIXTURE
Robert W. Moher, Jr., Sherrill; Charles S. French, Oneida, and Robert J. Reed, Vernon, all of N.Y., assignors to Oneida Ltd., Oneida, N.Y.
Filed Jun. 13, 1983, Ser. No. 503,510
Term of patent 14 years
U.S. Cl. D6—471



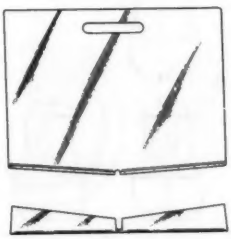


281,382
COMPUTER WORK STATION
Philip J. Byrne, P.O. Box 10475, and John B. Stege, P.O. Box 8355, both of, Aspen, Colo. 81612
Filed Feb. 17, 1983, Ser. No. 467,145
Term of patent 14 years
U.S. Cl. D6—474



281,383
ARTICLE DISPLAY BRACKET
Wilma R. Beach, Rhinebeck, N.Y., assignor to Daniel E. Gelles Associates, Inc., New York, N.Y.
Filed May 25, 1983, Ser. No. 498,068
Term of patent 14 years
U.S. Cl. D6—572

281,384
KITCHEN CUTTING BOARD
David A. Lacey, Deerfield, Ill., assignor to Ronald M. Wilen, Wheeling, Ill.
Filed Apr. 25, 1983, Ser. No. 488,344
Term of patent 14 years
U.S. Cl. D7—46



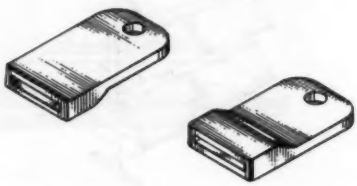
281,385
EGG CRACKER
James R. Ivy, 9001 Glacier, Apt. 138, Texas City, Tex. 77591
Filed Jan. 14, 1983, Ser. No. 458,017
Term of patent 14 years
U.S. Cl. D7—84.1

281,386
INSULATED JUG
Anso Zimmermann, Bad Hersfeld, Fed. Rep. of Germany, assignor to Rotpunkt Dr. Anso Zimmermann, Niederaula, Fed. Rep. of Germany
Filed Oct. 12, 1982, Ser. No. 433,725
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1982, MR 171
Term of patent 14 years
U.S. Cl. D7—317

281,387
RAKE
Walter Kolb, Betzdorf, Fed. Rep. of Germany, assignor to Wolf-Gerate GmbH, Fed. Rep. of Germany
Filed May 28, 1982, Ser. No. 383,154
Term of patent 14 years
U.S. Cl. D8—13

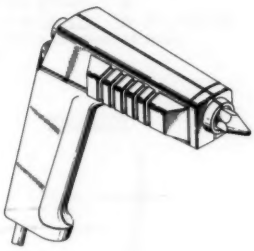
281,388
ADJUSTABLE BOX WRENCH
Hin C. Lok, B1, Earl St., Earl Garden, Kowloon, Hong Kong
Filed Jan. 24, 1983, Ser. No. 460,400
Claims priority, application United Kingdom, Sep. 1, 1982, 1008507
Term of patent 14 years
U.S. Cl. D8—22

281,389
OPENER FOR POP-TOP CONTAINERS
James A. Summers, 20730 W. Soledad St., Unit J, Canyon Country, Calif. 91351
Filed May 4, 1983, Ser. No. 491,530
Term of patent 14 years
U.S. Cl. D8—40



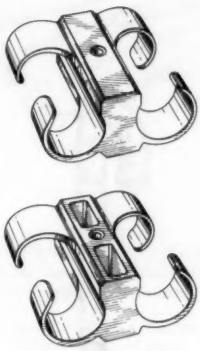
281,390
BOTTLE CLOSURE DEVICE
Florian J. Gorski, 11000 S. Central, Chicago Ridge, Ill. 60415
Filed Nov. 7, 1983, Ser. No. 549,503
Term of patent 14 years
U.S. Cl. D8—40

281,391
ELECTRIC GLUE GUN
Robert I. Somers, 5217 Caber Rd., Raleigh, N.C. 27612
Filed Nov. 28, 1983, Ser. No. 555,682
Term of patent 14 years
U.S. Cl. D8—61

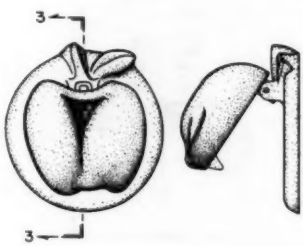


281,392
ABRADING TOOL
Paul S. Hepworth, 4B The Broadway, Oadby, Leicester, England
Filed Jul. 1, 1982, Ser. No. 394,474
Claims priority, application United Kingdom, Jan. 14, 1982, 821004661
Term of patent 14 years
U.S. Cl. D8—90

281,393
HOLDER FOR ELONGATED OBJECTS
Lars O. Karnhag, Runbovagen 28, S-191 48 Sollentuna, and Per-Olov Franzen, Bjorkebyvagen 6, S-175 62 Jarfalla, both of Sweden
Filed Apr. 21, 1983, Ser. No. 487,426
Claims priority, application Sweden, Oct. 21, 1982, 82-2532
Term of patent 14 years
U.S. Cl. D8—373



281,394
DOOR KNOCKER OR SIMILAR ARTICLE
Barbara G. Porta, Tappan, N.Y., assignor to Valley Head Farms, Suffern, N.Y.
Filed Apr. 11, 1983, Ser. No. 483,918
Term of patent 14 years
U.S. Cl. D8—401



281,395

DISPLAY CONTAINER

Harold Robey, 64 Crescent Rd., Kingston-on-Thames, Surrey, England

Filed Nov. 30, 1982, Ser. No. 445,665

Claims priority, application United Kingdom, Jun. 1, 1982, 821007035

Term of patent 14 years

U.S. Cl. D9—307

281,396

FLAGON

Charles S. Tobias, Tortola, British Virgin Isls., assignor to Pusser's Inc., Tortola, British Virgin Isls.

Filed Apr. 19, 1983, Ser. No. 486,463

Term of patent 14 years

U.S. Cl. D9—309

281,397

BOTTLE OR THE LIKE

Timothy Dearing, Ipswich, England, assignor to E. R. Howard Limited, Suffolk, England

Filed Jan. 28, 1983, Ser. No. 461,844

Term of patent 14 years

U.S. Cl. D9—338

281,398

DUAL CONTAINER PACKAGE

Lutz Kesselring, Zeven, Fed. Rep. of Germany, assignor to MAPA GmbH Gummi- und Plastikwerke, Zeven, Fed. Rep. of Germany

Filed Mar. 3, 1983, Ser. No. 471,790

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1982, MR 14

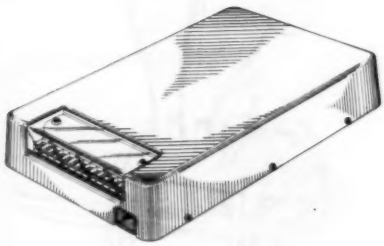
Term of patent 14 years

U.S. Cl. D9—341

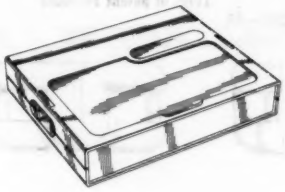
281,399
PACKAGING CONTAINER
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed Sep. 26, 1983, Ser. No. 536,559
Term of patent 14 years
U.S. Cl. D9—347

281,400
PACKAGING CONTAINER
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed Aug. 18, 1983, Ser. No. 524,272
Term of patent 14 years
U.S. Cl. D9—370

281,401
DETECTOR MODULE FOR A LINE MONITOR OR THE LIKE
Allen R. Perrins, Branford, Conn., assignor to The Superior Electric Company, Bristol, Conn.
Filed Jun. 20, 1983, Ser. No. 506,705
Term of patent 14 years
U.S. Cl. D10—75

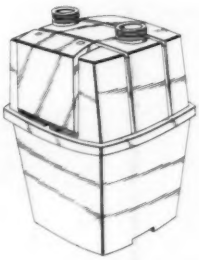


281,402
PROGRAMMABLE MULTIMETER HOUSING
John P. O'Connell, Halesowen, England, assignor to Fisons plc, Ipswich, England
Filed Nov. 18, 1982, Ser. No. 442,695
Term of patent 14 years
U.S. Cl. D10—78



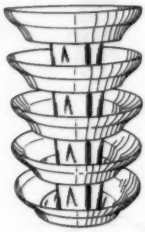
281,403
ELECTRONIC WEIGHING SCALE FOR DIETERS
Willard L. Zeigner, San Ramon, and John A. MacIntosh, Cupertino, both of Calif., assignors to Zemco, Inc., San Ramon, Calif.
Filed Jul. 18, 1983, Ser. No. 514,549
Term of patent 14 years
U.S. Cl. D10—93

281,404
POSITIVE DISPLACEMENT DIAPHRAGM FLUID METER HOUSING
Irwin A. Hicks, Radnor, Pa., assignor to The Singer Company, Stamford, Conn.
Filed May 13, 1983, Ser. No. 494,597
Term of patent 14 years
U.S. Cl. D10—99



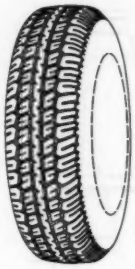
281,405
LINK FOR JEWELRY CHAIN
Gianni Bulgari, Rome, Italy, assignor to Ditta Sotirio Bulgari di Constantino e Giorgio Bulgari S.a.s., Rome, Italy
Continuation-in-part of Ser. No. 345,112, Feb. 2, 1982, abandoned, and a continuation-in-part of Ser. No. 420,469, Sep. 20, 1982, Pat. No. Des. 271,574. This application Jun. 8, 1983, Ser. No. 502,414
Term of patent 14 years
U.S. Cl. D11—93

281,406
CULTIVATING TOWER FOR PLANTS, FLOWERS OR THE LIKE
Robert Guénat, Maison Rosa-Tach, à l'attn de Mons. R. Guénat, Ponthaux, Switzerland (CH-1772)
Filed Feb. 25, 1983, Ser. No. 469,815
Term of patent 14 years
U.S. Cl. D11—153

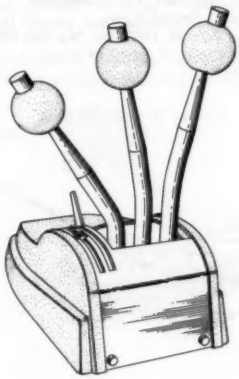


281,407
STAFF FOR A PENNANT
Regis Gustafsson, Gnosjö, Sweden, assignor to Vilhelmina Plast AB, Vilhelmina, Sweden
Filed Dec. 12, 1983, Ser. No. 560,397
Term of patent 14 years
U.S. Cl. D11—181

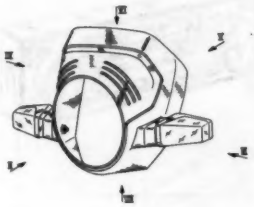
281,408
TIRE
Maurice Graas, Luxembourg, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 24, 1983, Ser. No. 544,676
Term of patent 14 years
U.S. Cl. D12—147



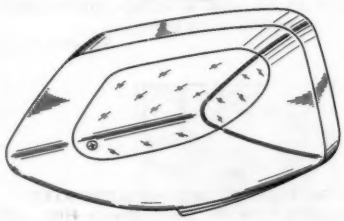
281,409
SHIFT CONTROL LEVER UNIT
Emanuel F. Cambria, Tannersville, Pa., assignor to Hurst Performance, Inc., Warminster, Pa.
Filed Jan. 10, 1983, Ser. No. 456,800
Term of patent 14 years
U.S. Cl. D12—179

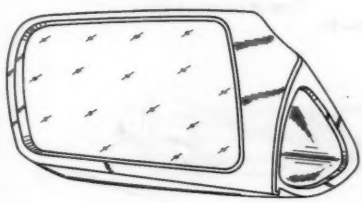


281,410
COMBINED MOTORCYCLE FAIRING AND DIRECTION INDICATORS
Klaus V. Gevert, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany
Filed Mar. 23, 1983, Ser. No. 477,870
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, MR 13095
Term of patent 14 years
U.S. Cl. D12—182

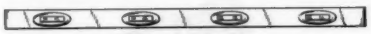


281,411
COMBINED REAR-VIEW MIRROR AND DIRECTION INDICATOR FOR MOTORCYCLES
Karl H. Abe, Steinbach, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke AG, Fed. Rep. of Germany
Filed Oct. 21, 1983, Ser. No. 544,432
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1983, MR 13423
Term of patent 14 years
U.S. Cl. D12—188

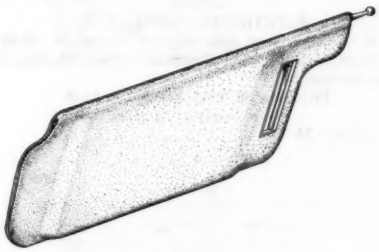




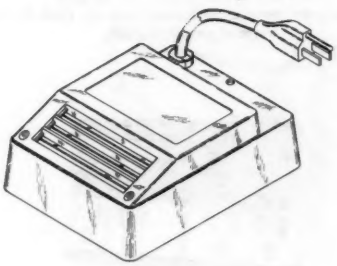
281,412
TRIM STRIP FOR A TRUCK SLEEPER COMPARTMENT
Leslie C. Barnhart, 5404 NW. 113th St., Oklahoma City, Okla. 73132
Filed Jan. 30, 1984, Ser. No. 575,312
Term of patent 14 years
U.S. Cl. D12—190



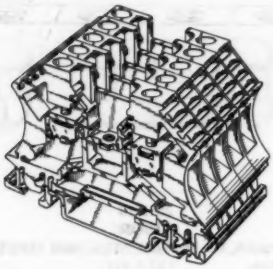
281,413
VISOR
Prince Corporation, 02, Holland, Mich., and Michael J. Cody, Holland, Mich.
Filed Dec. 6, 1982, Ser. No. 447,232
Term of patent 14 years
U.S. Cl. D12—191



281,414
MOTOR FOR ROTATING A SPIT
Hans Wolf, Pompton Lakes, N.J., assignor to Vernitron Corporation, Lake Success, N.Y.
Filed Aug. 4, 1983, Ser. No. 520,260
Term of patent 14 years
U.S. Cl. D13—2

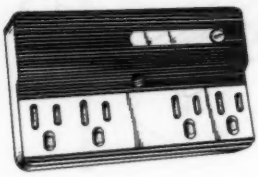


281,415
TERMINAL BLOCK
Octavio Nüsse, Münster, Fed. Rep. of Germany, assignor to C.A. Weismüller GmbH & Co., Detmold, Fed. Rep. of Germany
Filed Apr. 15, 1982, Ser. No. 368,679
Term of patent 14 years
U.S. Cl. D13—24

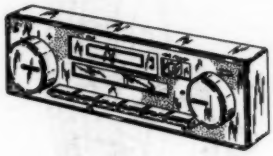


281,416
ELECTRICAL CONNECTOR
John H. Buscher, East Amherst, and Michael E. Hoffman, Lockport, both of N.Y., assignors to Eastman Machine Company, Buffalo, N.Y.
Filed Sep. 30, 1982, Ser. No. 431,169
Term of patent 14 years
U.S. Cl. D13—24

281,417
OVERLOAD-PROTECTED ELECTRICAL RECEPTACLE-MULTIPLYING PLUG OR SIMILAR ARTICLE
Francois Guichard, 11 rue Stanislas, 75006 Paris, France
Filed Nov. 30, 1983, Ser. No. 556,698
Claims priority, application France, Aug. 18, 1983, 83 3064
Term of patent 14 years
U.S. Cl. D13—28



281,418
FRONT CONTROL PANEL FOR A VEHICULAR COMBINED TAPE PLAYER AND RADIO OR THE LIKE
Robert H. Lewis, Farmington Hills, and Hector J. Munoz, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Sep. 30, 1983, Ser. No. 538,020
Term of patent 14 years
U.S. Cl. D14—10

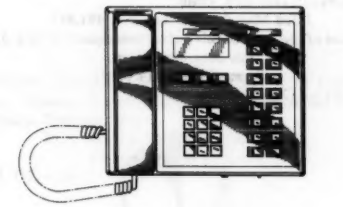


281,419
MICROPHONE OR SIMILAR ARTICLE
Albert L. Nagele, Wilmette, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 22, 1983, Ser. No. 525,187
Term of patent 14 years
U.S. Cl. D14—12

281,420
DUAL PURPOSE MICROPHONE SUPPORTER
Maurice I. Rosenthal, 8900 Alto Cedro, Beverly Hills, Calif. 90210
Filed Jul. 28, 1983, Ser. No. 517,908
Term of patent 14 years
U.S. Cl. D14—13

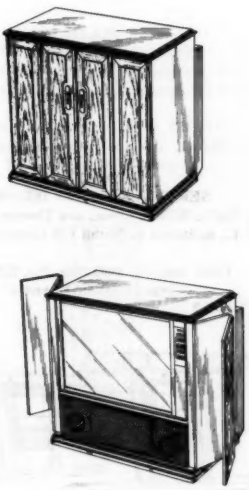
281,421
AUTOMATED TELEPHONE COMMUNICATING MACHINE
Charles L. Meininger, Littleton, Colo., and Robert S. Bugash, Wheaton, Md., assignors to Applied Computer, Inc., Denver, Colo.
Filed Sep. 29, 1982, Ser. No. 426,803
Term of patent 14 years
U.S. Cl. D14—52

281,422
TELEPHONE UNIT
Norio Miura, Niiza; Noboru Mihara, Mitaka, and Atsuko Kamoshida, Tokyo, all of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan
Filed Dec. 29, 1982, Ser. No. 454,453
Claims priority, application Japan, Jul. 14, 1982, 57-31814
Term of patent 14 years
U.S. Cl. D14—58



281,423
CALL PROCESSOR FOR A TELEPHONE SYSTEM
Takashi Oshima, Tokyo; Noboru Mihara, Mitaka, and Shuji Yamauchi, Higashikurume, all of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan
Filed Dec. 29, 1982, Ser. No. 454,454
Claims priority, application Japan, Jul. 16, 1982, 57-32243
Term of patent 14 years
U.S. Cl. D14—58

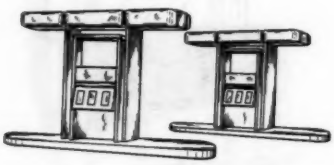
281,424
PROJECTION TELEVISION RECEIVER
John W. Caldwell, 1829 Warwick Rd., San Marino, Calif. 91108
Filed Dec. 20, 1982, Ser. No. 451,095
Claims priority, application Japan, Jun. 18, 1982, 57-26949
Term of patent 14 years
U.S. Cl. D14—83



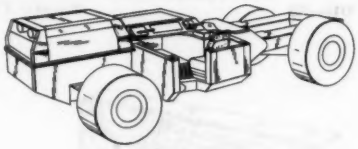
281,425
HOUSING FOR A CABLE TELEVISION CHANNEL SELECTOR UNIT
Silas S. Dulan, 3820 N. Bartel Rd., Oklahoma City, Okla. 73121
Filed May 5, 1983, Ser. No. 491,848
Term of patent 14 years
U.S. Cl. D14—84

281,426
KEYBOARD FOR AN ELECTRONIC COMPUTER
Masaki Kurihara, and Masahiko Mizuno, both of Shiojiri, Japan, assignors to Epson Corporation and Kabushiki Kaisha Suwa Seikosha, both of Tokyo, Japan
Filed May 31, 1983, Ser. No. 499,698
Claims priority, application Japan, Dec. 3, 1982, 57-54376
Term of patent 14 years
U.S. Cl. D14—100

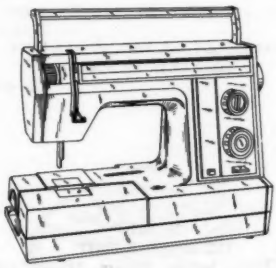
281,427
SERVICE STATION ISLAND
Charles M. Baffo, Wilton, Conn., and Thomas H. Geismar, New York, N.Y., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Aug. 31, 1983, Ser. No. 528,334
Term of patent 14 years
U.S. Cl. D15—9.2



281,428
MINE CARRIER VEHICLE
Godfrey S. Kent, Woodstock, Canada, assignor to Timberjack Inc., Woodstock, Canada
Filed May 10, 1982, Ser. No. 376,870
Term of patent 14 years
U.S. Cl. D15—21

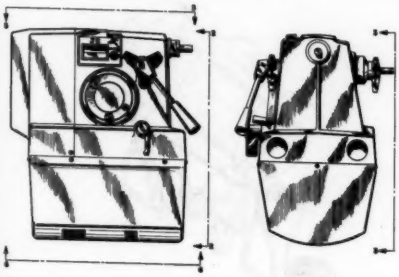


281,429
SEWING MACHINE
Nobufusa Kuroki, Machida, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan
Filed Feb. 7, 1983, Ser. No. 464,734
Claims priority, application Japan, Oct. 7, 1982, 57-45475
Term of patent 14 years
U.S. Cl. D15—69



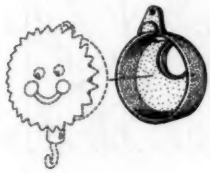
281,430
HYDRAULIC PRESS
Miroslav Uroshevich, Cincinnati, Ohio, assignor to Cincinnati Incorporated, Harrison, Ohio
Filed May 5, 1983, Ser. No. 491,917
The portion of the term of this patent subsequent to Sep. 3, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D15—123

281,431
HEADSTOCK FOR A MULTIPURPOSE WOODWORKING TOOL
Charles J. Haas, Middletown, and Michael J. Duwell, Cincinnati, both of Ohio, assignors to Shopsmith, Inc., Dayton, Ohio
Filed Nov. 16, 1983, Ser. No. 552,587
Term of patent 14 years
U.S. Cl. D15—125



281,432
CHIPPING BLADE
Jorma Tuomaala, Karhula, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland
Filed Apr. 27, 1982, Ser. No. 372,120
Claims priority, application Finland, Dec. 1, 1981, 925/81; Dec. 1, 1981, 926/81
Term of patent 14 years
U.S. Cl. D15—139

281,433
CHILD'S MUSICAL MOBILE MUSIC BOX COVER
Anthony Chrones, Warwick, R.I., assignor to Gerber Products Company, Fremont, Mich.
Filed Jul. 14, 1983, Ser. No. 513,558
Term of patent 14 years
U.S. Cl. D17—24



281,434
TYPEWRITER
Shigemasa Kato, Kanagawa, and Sanae Takada, Tokyo, both of Japan, assignors to Tokyo Juki Industrial Co., Ltd., Tokyo, Japan
Filed Nov. 16, 1983, Ser. No. 552,285
Claims priority, application Japan, Jul. 29, 1983, 58-033407
Term of patent 14 years
U.S. Cl. D18—1

281,435
PRINTING CALCULATOR
Masaji Sawada; Hiroshi Sakaguchi; Shigeaki Hayashi, and Kazuo Yamada, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Sep. 29, 1982, Ser. No. 426,616
Claims priority, application Japan, Mar. 30, 1982, 57-13651
Term of patent 14 years
U.S. Cl. D18—7

281,436

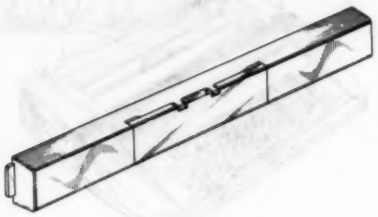
IDENTIFICATION HOLDER FOR A LUGGAGE CASE OR THE LIKE

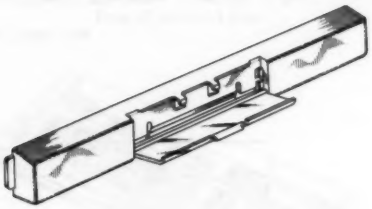
Roger D. Winter, Lakewood; James S. Gregg, Aurora, and Daniel R. Skewis, Westminster, all of Colo., assignors to Samsonite Corporation, Denver, Colo.

Filed Jul. 25, 1983, Ser. No. 516,750

Term of patent 14 years

U.S. Cl. D20—43





281,437

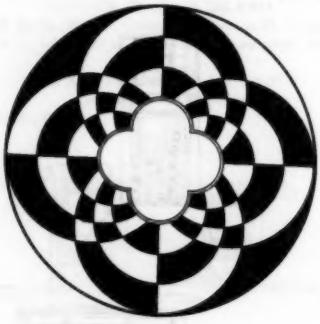
GAME BOARD FOR CHESS, CHECKERS OR THE LIKE

Eugene E. Perlow, 740 E. Baseline Rd., Phoenix, Ariz. 85040-6615

Filed Jul. 20, 1983, Ser. No. 515,491

Term of patent 14 years

U.S. Cl. D21—24



281,438

CRIB TOY

Dennis C. Wong, Kowloon, Hong Kong, assignor to Deacon & Co. Limited, Kowloon, Hong Kong

Filed May 2, 1983, Ser. No. 490,428

Claims priority, application United Kingdom, Nov. 18, 1982, 1009770

Term of patent 14 years

U.S. Cl. D21—63

281,439

INFLATABLE KITE

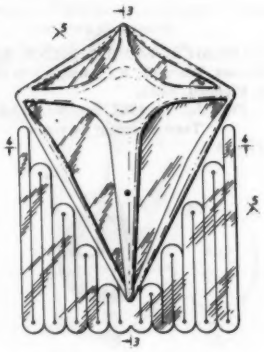
James T. Jordan, 76a, Beckwith Rd., North Dulwich, London SE24, England

Filed Sep. 21, 1982, Ser. No. 420,723

Claims priority, application United Kingdom, Mar. 29, 1982, 1004855

Term of patent 14 years

U.S. Cl. D21—88



281,440

TOY CONSTRUCTION PIECE

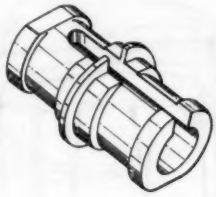
Nils A. I. Petersson, Killeberg, Sweden, assignor to Brio Toy AB, Osby, Sweden

Filed Sep. 20, 1983, Ser. No. 533,579

Claims priority, application Sweden, Mar. 25, 1983, 83-0867

Term of patent 14 years

U.S. Cl. D21—108



281,441

TOY MOTORCYCLE

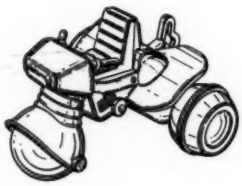
Sin C. Tam, and Chong V. Sou, both of Kowloon, Hong Kong, assignors to Evergood Toys Manufacturing Ltd., Hong Kong, Hong Kong

Filed May 9, 1983, Ser. No. 492,836

Claims priority, application United Kingdom, Nov. 17, 1982, 1009762

Term of patent 14 years

U.S. Cl. D21—134



281,442

DEVICE FOR PROPELLING TOY CARS

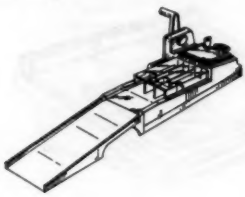
Kazutaka Takeuchi, Murakami Yachiyo, Japan, assignor to Blue Box Toy Factory Limited, Hong Kong, Hong Kong

Filed Apr. 22, 1983, Ser. No. 487,674

Claims priority, application United Kingdom, Oct. 28, 1982, 1009434

Term of patent 14 years

U.S. Cl. D21—141



281,443

TOY RAILWAY TRACK SECTION

Flemming H. Olsen, Espergaerde, Denmark, assignor to Interlego A.G., Baar, Switzerland

Filed Dec. 10, 1982, Ser. No. 448,753

The portion of the term of this patent subsequent to Oct. 15, 1999, has been disclaimed.

Term of patent 14 years

U.S. Cl. D21—143

281,444

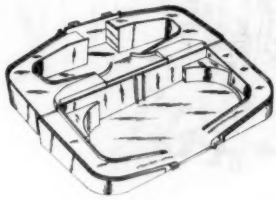
TOY TRACKWAY

Mel Appel, 9 Nottingham Rd., Livingston, N.J. 07039, and George Kress, Scotch Plains, N.J., assignors to Mel Appel, Livingston, N.J.

Filed Jan. 31, 1983, Ser. No. 462,346

Term of patent 14 years

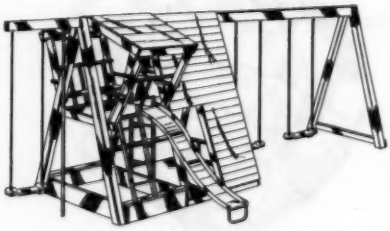
U.S. Cl. D21—143



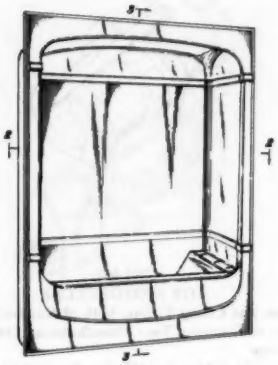
281,445
ELEVATING FIREMAN TOY
Yoshio Udagawa, Chiba, Japan, assignor to Dah Yang Toy Industrial Co., Ltd., Tainan, Taiwan
Filed Dec. 2, 1982, Ser. No. 446,483
Claims priority, application Taiwan, Sep. 11, 1982, 7132759
Term of patent 14 years
U.S. Cl. D21—150

281,446
EXERCISE BAR
Roger S. Keilman, 22447 Edison, Dearborn, Mich. 48124
Filed May 6, 1983, Ser. No. 492,236
Term of patent 14 years
U.S. Cl. D21—191

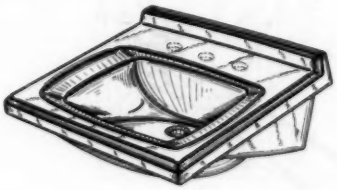
281,447
OUTDOOR CHILD'S PLAY UNIT
Richard F. Gordon, Salt Lake City, Utah, assignor to Sportplay Creative Enterprises, Inc., Utah
Filed May 2, 1983, Ser. No. 490,859
Term of patent 14 years
U.S. Cl. D21—244



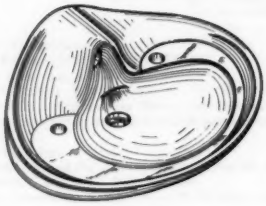
281,448
COMBINED BATHTUB AND SHOWER ENCLOSURE
Joseph Primucci, Willowdale, Canada, assignor to Mirolin Industries, Inc., Toronto, Canada
Filed Oct. 6, 1983, Ser. No. 539,397
Claims priority, application Canada, Apr. 20, 1983, D 20-04-83-1
Term of patent 14 years
U.S. Cl. D23—49



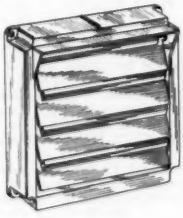
281,449
CABINET-TOP LAVATORY
Henry M. Stairs, Jr., Neshanic, N.J., assignor to American Standard Inc., New York, N.Y.
Filed Aug. 11, 1983, Ser. No. 522,087
Term of patent 14 years
U.S. Cl. D23—58



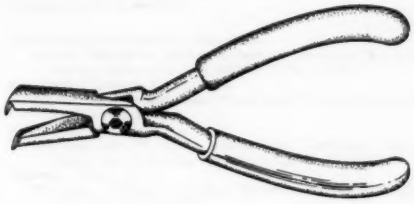
281,450
LAVATORY
Joseph W. Platner, Footes Bridge Rd., Guilford, Conn. 06437
Filed Mar. 18, 1983, Ser. No. 476,644
Term of patent 14 years
U.S. Cl. D23—58



281,451
VENT FOR CLOTHES DRYER
Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502
Filed Aug. 26, 1982, Ser. No. 411,671
Term of patent 14 years
U.S. Cl. D23—151



281,452
ORTHODONTIC ARCHWIRE CUTTER
Craven H. Kurz, 465 N. Roxbury Dr., #1011, Beverly Hills, Calif. 90210
Filed Sep. 29, 1982, Ser. No. 426,842
Term of patent 14 years
U.S. Cl. D24—10



281,453
STAND FOR INTRAVENOUS EQUIPMENT
Al DiGianfilippo, Arlington Heights, and James Hitchcock, Jr., Barrington, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Jul. 15, 1983, Ser. No. 514,052
Term of patent 14 years
U.S. Cl. D24—31

281,454
MALE SANITARY DEVICE
Francis T. Feeney, No. 2 Windsor Ct., Lansdale, Pa. 19446
Filed Sep. 22, 1982, Ser. No. 421,520
Term of patent 14 years
U.S. Cl. D24—49

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF NOVEMBER, 1985

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Ayers, Ray R., to Shell Oil Company. Barge-based oil barrier. 4,554,072, Cl. 210-242.300.

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Silvestrini, Bruno, 4,554,288, Cl. 514-418.000.

Babcock Electro-Mechanical, Inc.: *See*—
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Back, Karl J., to Stretch Emballering AB. Plant for wrapping the envelope surface of a preferably cylindrical article. 4,553,372, Cl. 53-411.000.

Badger, Philip O., to Miracle Metals, Inc. Implantation of certain solid lubricants into certain metallic surfaces by mechanical inclusion. 4,553,417, Cl. 72-42.000.

Baer, Jean-Michel, to Thomson CSF. Wide band impedance transformer with transformation ratio close to three for radio frequencies. 4,554,518, Cl. 333-33.000.

Bafunno, Daniel V.; Detter, Gary C.; Ehrhardt, James D.; Gaughan, Patrick J.; Johnson, Dale C.; and Rowlands, Richard C., to General Motors Corporation. Switch, lamp, and connector assembly. 4,554,618, Cl. 362-155.000.

Bagg, Robert D. Golf apparatus. 4,553,752, Cl. 273-32.00A.

Bahl, Andrew L.; Stilwell, George R., Jr; Uberbacher, Edward C.; and Williamson, Charles A., to International Business Machines Corporation. Detachable fiber optic connector assembly. 4,553,814, Cl. 350-96.210.

Bailey, Alan, to Cape Gate Fence & Wire Works (Proprietary) Limited. Fencing. 4,553,740, Cl. 256-33.000.

Bailey, Ronald D.; Charbonnier, Jacques; and Chotard, Michel, to Allied Corporation; and Societe Anonyme D.B.A. Axial retention of the shoe of a drum brake and a drum-brake shoe equipped with an axial-retention device. 4,553,649, Cl. 188-340.000.

Bailleul, Gilles; and Coville, Patrick, to U.S. Philips Corporation. Heating plate for printing apparatus. 4,554,434, Cl. 219-216.000.

Baines, Richard M. Flexible barrier holding and manipulating mechanism. 4,553,739, Cl. 256-23.000.

Baird, J. Mark; Barnett, Larry R.; and Lau, Yue-Ying, to United States of America, Navy. Active circulator gyrotron traveling-wave amplifier. 4,554,483, Cl. 315-4.000.

Baji, Toru: *See*—
Shimomoto, Yasuharu; Tanaka, Yasuo; Takasaki, Yukio; Ishioka, Sachio; Tsukada, Toshihisa; and Baji, Toru, 4,554,478, Cl. 313-366.000.

Baker, Charles D., to University of Utah Research Institute. Artificial sphincter apparatus and method. 4,553,271, Cl. 623-14.000.

Baker, Donal E., to Westinghouse Electric Corp. Variable speed constant frequency power system with auxiliary DC output. 4,554,501, Cl. 322-29.000.

Baker, Richard W., to Membrane Technology and Research, Inc. Process for recovering organic vapors from air. 4,553,983, Cl. 55-16.000.

Baker, William B.; and Betsill, Harry E., to Du Pont de Nemours, E. I., and Company. Audio dosimeter. 4,554,639, Cl. 364-556.000.

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Le Dantec, Olivier J.; and Balage, Charly G., 4,553,889, Cl. 411-21.000.

Baldwin, Francis P.: *See*—
Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; Foroulis, Z. Andrew; and Baldwin, Francis P., 4,554,326, Cl. 525-354.000.

Ball Corporation: *See*—
Jones, William E., 4,553,998, Cl. 65-69.000.

Ball, James H., to Minnesota Mining and Manufacturing Company. Buried cable splice closure. 4,554,401, Cl. 174-37.000.

Bannister, Richard J., to Burroughs Corporation. Generalized fault reporting system. 4,554,661, Cl. 371-15.000.

Bansbach, Armin; and Senkel, Helmut, to Semperlux GmbH. Lamp with a linear light source. 4,554,619, Cl. 362-222.000.

Barabas, Eugene S.; and Cho, James R., to GAF Corporation. Method of preparing an aqueous solution comprising vinylpyrrolidone/vinyl acetate copolymers of various molecular weights using a single initiator system consisting essentially of t-Butylperoxypivalate. 4,554,311, Cl. 524-808.000.

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Baram, David. Valve. 4,553,564, Cl. 137-554.000.

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Barclay, John A.; and Dyson, Jack E., to United States of America, Energy. Rotary multiposition valve. 4,553,566, Cl. 137-625.110.

Bardhan, Nabendu: *See*—
Ashley, Robert J.; Bardhan, Nabendu; Hardy, Peter D.; and Jeffs, Keith D., 4,553,971, Cl. 604-415.000.

Bares, Jan, to Xerox Corporation. Metering blade for use in a development system. 4,553,829, Cl. 355-3.0DD.

Barlian, Reinhold; and Fischle, Martin, to Barlian, Reinhold. Temperature-humidity surveillance equipment. 4,553,432, Cl. 73-336.000.

Barnett, Larry R.: *See*—
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Baron, Joseph J., Jr.: *See*—
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Barsacq, Gabriel, to S.A.R.L. Aspiramatic. Centralized suction cleaning installations. 4,553,991, Cl. 55-218.000.

Barten, Axel: *See—*
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Bartley, Gary L.: *See—*
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Bartsch, Erhard: *See—*
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Bartsch, Karl: *See—*
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Basawapatna, Ganesh R., to Microsource, Inc. Frequency source having YIG absorption/transmission filter. 4,554,516, Cl. 331-76.000.

BASF Aktiengesellschaft: *See—*
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Schulz, Guenther; and Zuerger, Manfred, 4,554,240, Cl. 430-285.000.
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BASF Wyandotte Corporation: *See—*
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Bastenbeck, Edwin W., to Enthone, Incorporated. Selective nickel stripping compositions and method of stripping. 4,554,049, Cl. 156-656.000.

Bastian, Donald G.: *See—*
Gaspar, Richard A.; Bastian, Donald G.; and Denlinger, Timothy L., 4,554,044, Cl. 156-510.000.

Batchelor, Douglas R., to Libman Broom Company. Mop head. 4,553,282, Cl. 15-150.000.

Battelle Memorial Institute: *See—*
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Battistella, Guido: *See—*
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Baxter Travenol Laboratories, Inc.: *See—*
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Bayer Aktiengesellschaft: *See—*
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Pfleger, Albert; and Klesel, Peter, 4,553,585, Cl. 165-41.000.

Bayssat, Michel; Ferrand, Gerard; and Depin, Jean-Claude, to Lipha Lyonnaise Industrielle Pharmaceutique. 2-Amino-5-phenyl-1,3-benzodiazepines. 4,554,273, Cl. 514-221.000.

Bazenant, Dominique: *See—*
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BBC Brown, Boveri & Company Limited: *See—*
Braun, Moritz; Kaufmann, Anna; and Muller, Edwin, 4,554,063, Cl. 204-254.000.
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Bean, John C.; Chiu, Kin-Chung R.; and Poate, John M., to AT&T Bell Laboratories. Method for producing metal silicide-silicon heterostructures. 4,554,045, Cl. 156-613.000.

Beattie, Willard H.: *See—*
Freund, Samuel M.; Maier, William B., II; Holland, Redus F.; and Beattie, Willard H., 4,554,060, Cl. 204-157.10R.

Beaudet, William R.; Pepper, Mark A.; and Rester, David H., to Mead Corporation, The. Fluid jet print head. 4,554,558, Cl. 346-75.000.

Bechstein, Bradley L., to Tibbet Incorporated. Support system for ceiling and wall panels. 4,553,365, Cl. 52-483.000.

Beck, Ernst: *See—*
Schuler, Bernhard; and Beck, Ernst, 4,553,411, Cl. 66-123.000.

Beck, Harald: *See—*
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Becker, Gero, legal representative: *See—*
Becker, Reinhard, deceased; Seber, Gudula, legal representative; Becker, Ulrich, legal representative; Becker, Hans C., legal representative; Becker, Gero, legal representative; Mussigmann, Artur; and Schurr, Anton, 4,553,811, Cl. 350-96.200.

Becker, Hans C., legal representative: *See—*
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Becker, Reinhard, deceased; Seber, Gudula, legal representative; Becker, Ulrich, legal representative; Becker, Hans C., legal representative; Becker, Gero, legal representative; Mussigmann, Artur; and Schurr, Anton, to Licentia Patent-Verwaltungs-GmbH. Optoelectrical coupling arrangement. 4,553,811, Cl. 350-96.200.

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Becton, Dickinson and Co.: *See—*
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Beesley, Graham E., to Motorola, Inc. Radio receiver incorporating a data operated squelch system. 4,554,665, Cl. 371-55.000.

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Begin, Pierre: *See—*
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Behar, David; Rajbenbach, Arie L.; Juszynski, Marta; and Ben-Hur, Nahum. Synthetic wound covering. 4,554,317, Cl. 525-28.000.

Behn, Ernest E.; and Behn, Jerome L. Ridge cleaning attachment for planters. 4,553,607, Cl. 172-156.000.

Behn, Jerome L.: *See—*
Behn, Ernest E.; and Behn, Jerome L., 4,553,607, Cl. 172-156.000.

Behrens, Walter R. Illuminated wind socks for airports. 4,553,430, Cl. 73-188.000.

Behringer, Uwe; Bohlen, Harald; Kulcke, Werner; and Nehmiz, Peter, to International Business Machines Corporation. Electron beam projection lithography. 4,554,458, Cl. 250-492.200.

Bekiaroglou, Prodromos. Engine with rotating cylinder wall. 4,553,506, Cl. 123-45.00R.

Belamaric, Zelimir, to L. Schuler GmbH. Electrical power source for resistance welding apparatus. 4,554,430, Cl. 219-108.000.

Bell & Howell Company: *See—*
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Bell, John L., to Burroughs Corporation. System in which multiple devices have a circuit that bids with a fixed priority, stores all losing bids if its bid wins, and doesn't bid again until all stored bids win. 4,554,628, Cl. 364-200.000.

Belongia, Larry P., to Magna-Graphics Corporation. Rotary web processing apparatus. 4,553,461, Cl. 83-344.000.

Bemis Manufacturing Company: *See—*
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Pepper, Kenneth V., 4,553,357, Cl. 52-12.000.

Ben Clements & Sons, Inc.: *See—*
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Ben-Hur, Nahum: *See—*
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Bender, Annie L.: *See—*
Bender, Robert L.; and Bender, Annie L., 4,553,749, Cl. 273-1.00R.

Bender, Robert L.; and Bender, Annie L. Toy and game apparatus. 4,553,749, Cl. 273-1.00R.

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Bengtsson, Alvar. Irrigation system. 4,553,699, Cl. 239-183.000.

Bennett, George R.; and Day, Robert S., to Molins plc. Handling rod-like articles. 4,553,660, Cl. 198-425.000.

Bennett, James G.; and Chambers, Gregory R., to General Electric Company. Copper-magnesium catalyst and method for alkylation of hydroxyaromatic compounds therewith. 4,554,266, Cl. 502-344.000.

Bennett, James G., Jr.: *See—*
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Bennett, Peter C.: *See—*
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Bennett, Robert A. One piece press and lock tab for containers. 4,553,684, Cl. 220-268.000.

Benoit, Gordon L., to Mobil Oil Corporation. Thermoplastic bag and thermoplastic bag pack. 4,554,192, Cl. 428-35.000.

Bentley, Trisha; Walls, John E.; and Dhillon, Major S., to American Hoechst Corporation. Amino acid stabilizers for water soluble diazonium compound condensation products. 4,554,236, Cl. 430-157.000.

Bercier, John R.; Cieslowski, Thomas C.; Delaquila, Gary E.; Leone, James W.; and Mauersberger, Paul H., to Wagner Zip-Change Inc. Display letter mounting and method therefor. 4,553,345, Cl. 40-576.000.

Berg, Martin. Combustion chamber for dual turbine wheel engine. 4,553,386, Cl. 60-39.150.

Bergsten, Sten E.: *See*—
Suomala, John E.; Bratton, Kenneth L.; Bergsten, Sten E.; Savic, Nicolas M.; and Gardner, E. Boyd, 4,554,000, Cl. 65-129.000.

Berks, Robert S.: *See*—
Collett, Geoffrey K.; Martin-Jones, Christopher B.; Tapner, Peter N.; Commander, David J.; Gilbey, Mark S.; and Berks, Robert S., 4,553,490, Cl. 112-38.000.

Bernard, Jean; Beyl, Jean J. A.; Campillo, Christian; and le Faou, Daniel, to Ste Look. Ski binding for cross-country skiing. 4,553,771, Cl. 280-615.000.

Bertram, Leo; Schemmann, Hugo; and de Boer, Jan, to U.S. Philips Corporation. Electric motor having a U-shaped stator iron. 4,554,471, Cl. 310-49.00R.

Besser Company: *See*—
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Betatene Limited: *See*—
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Bethlehem Steel Corporation: *See*—
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Betsill, Harry E.: *See*—
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Beyl, Jean J. A.: *See*—
Bernard, Jean; Beyl, Jean J. A.; Campillo, Christian; and le Faou, Daniel, 4,553,771, Cl. 280-615.000.

Biadigo, Mario; and Zucchi, Gianfranco, to Ideal Standard S.p.A. Automatic machine for the fettling of the syphon of sanitary appliances. 4,553,920, Cl. 425-267.000.

BICC Public Limited Company: *See*—
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Cooke, Edward I., 4,554,116, Cl. 264-1.500.

Bickford, Ian J.: *See*—
Embrey, Derek M.; Webb, Stuart F.; Bickford, Ian J.; and Caxton Doss-Desouza, Argus F., 4,554,422, Cl. 200-61.910.

Bidan, Gerard: *See*—
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Bielkevicius, Jonas R.; and Schmitt, Paul M., to GTE Communications Products Corporation. Flag detection circuit. 4,554,541, Cl. 340-825.680.

Bieneman, Matthew J., to Westinghouse Electric Corp. Multi-level raster scan display system. 4,554,538, Cl. 340-799.000.

Bierlein, John C.; and DeHart, Arnold O., to General Motors Corporation. Bearing having nickel-tin-copper barrier layer. 4,553,856, Cl. 384-276.000.

Bierlein, John C.: *See*—
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Bierman, Laurence W.; Edinborough, Charles R.; and Johnson, David K., to J. R. Simplot Company. Process for granulation of fertilizer materials. 4,554,066, Cl. 71-29.000.

Biersach, James E. Omnidirectional siren. 4,554,531, Cl. 340-387.000.

Bilkie, Robert M. Tap duct crimping tool. 4,553,422, Cl. 72-458.000.

Binev, Binio: *See*—
Eckhardt, Erich; Schmitt, Karl; Grone, Wolfgang; and Binev, Binio, 4,553,620, Cl. 180-6.480.

Birkner, John M.: *See*—
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BL Technology Limited: *See*—
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Blair, Ian L., to George Blair Public Limited Company. Linked chain. 4,553,791, Cl. 305-39.000.

Blake, Peter J.: *See*—
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Blatt, Leland F. Retractor mechanism for article transfer apparatus. 4,553,444, Cl. 74-110.000.

Blesing, Dieter; Habel, Erich; and Walther, Hans J., to Carl Freudenberg, Firma. Seal. 4,553,761, Cl. 277-152.000.

Blien, Harry: *See*—
Strobl, Otto; Blien, Harry; and Uliczka, Wolfgang, 4,553,289, Cl. 19-161.100.

Block, Roger R. Connector for electromagnetic impulse suppression. 4,554,608, Cl. 361-119.000.

Blohm & Voss AG: *See*—
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Blood, Mark L.; Darnell, Joseph W.; Fergeson, Allen D.; and Rouse, David M., to AT&T Bell Laboratories. Data communication network. 4,554,659, Cl. 370-88.000.

Bloomquist, Dayton E., to Red Owl Stores, Inc. Refrigeration/air exchanger system maintaining two different temperature compartments. 4,553,584, Cl. 165-30.000.

Blum, Ronald D., to Tie-Tite Products, Incorporated. Reusable tying device. 4,553,293, Cl. 24-119.000.

Bobolts, Elroy, Jr.: *See*—
Kaschner, William C.; and Bobolts, Elroy, Jr., 4,553,893, Cl. 414-152.000.

Bock, Erich; Lovas, Kurt; Promoli, Johann-Christian; and Dammig, Joachim, to Schubert & Salzer. Yarn accumulator. 4,553,709, Cl. 242-47.010.

Bock, Mark G.; and Freidinger, Roger M., to Merck & Co., Inc. Substituted quinazolino-1,4-benzodiazepin-6,9-diones and their preparation. 4,554,272, Cl. 514-219.000.

Bock, Thomas J., to Borg-Warner Corporation. Chain-belt. 4,553,953, Cl. 474-201.000.

Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., to International Flavors & Fragrances Inc. Organoleptic uses of esters of 1-hydroxymethyl-2-acyl cyloropane. 4,554,095, Cl. 252-522.00R.

Boden, Richard M.: *See*—
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Bodenseewerk Perkin-Elmer & Co., GmbH: *See*—
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Boehringer Mannheim GmbH: *See*—
Homann, Ernst; Nelboeck, Michael; Schlieder, Klaus; and Bayer, Gernold, 4,553,553, Cl. 128-749.000.
Rosicke, Bernd; and Rosenbladt, Rudolf V., 4,553,848, Cl. 356-448.000.

Boeing Company, The: *See*—
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Pinson, George T., 4,553,718, Cl. 244-3.150.

Bofinger, Gerd; Stelter, Norbert; and Wuest, Rainer, to Dr. Ing. h.c.F. Porsche AG. Installation for controlling a clutch in response to drive pedal position and engine speed. 4,553,654, Cl. 192-0.076.

Bogdanovic, Borislav, to Studiengesellschaft Kohle mbH. Method of preparing active magnesium-hydride or magnesium hydrogen-storer systems. 4,554,152, Cl. 423-647.000.

Bogdanovic, Borislav, to Studiengesellschaft Kohle mbH. Process for the production of magnesium hydrides. 4,554,153, Cl. 423-647.000.

Boger, Manfred; and Drabek, Jozef, to Ciba-Geigy Corporation. Oxamic acid derivatives. 4,554,290, Cl. 514-487.000.

Bogese, Charles E., to Virginia Patent Development Corp. Low profile modular plug. 4,553,800, Cl. 339-59.00M.

Boggs, Roger L., to Caterpillar Tractor Co. Flexible dirt guard with back-up plate for track-type vehicle. 4,553,790, Cl. 305-12.000.

Bogisich, Ferenc: *See*—
Kovari, Pal; Galambos, Tibor; Bogisich, Ferenc; and Teringer, Imre, 4,553,885, Cl. 409-201.000.

Bohlen, Harald: *See*—
Behringer, Uwe; Bohlen, Harald; Kulcke, Werner; and Nehmiz, Peter, 4,554,458, Cl. 250-492.200.

Bohlin, Kjell: *See*—
Tove, Per-Arne; Bohlin, Kjell; Stolt, Lars; and Norde, Herman, 4,554,569, Cl. 357-15.000.

Bohls, Fred O., to Runge, Thomas M. Externally valved shunt for cardiopulmonary bypass pump. 4,553,532, Cl. 128-1.00D.

Boissinot, Jean-Guy; and Begin, Pierre. Scrubber apparatus for purifying foul air produced during an embalming, an autopsy or the like. 4,553,992, Cl. 55-279.000.

Boller, Edward; and Williams, Michael R., to Hydrovane Compressor Company Limited. Positive displacement rotary compressors. 4,553,906, Cl. 417-295.000.

Bolton-Emerson, Inc.: *See*—
Danforth, Donald W., 4,554,051, Cl. 162-49.000.

Bolton, Theodore S.: *See*—
Napolitano, James E.; Bolton, Theodore S.; and McHale, John P., 4,553,405, Cl. 62-262.000.

Borchardt, John K.; and Rao, S. Prabhakara, to Halliburton Company. High density well drilling, completion and workover brines, fluid loss reducing additives therefor and methods of use. 4,554,081, Cl. 252-8.50A.

Borg-Warner Corporation: *See*—
Bock, Thomas J., 4,553,953, Cl. 474-201.000.
Lech, Thaddeus, Jr.; and Schmitz, Paul L., 4,553,655, Cl. 192-106.200.
Norbeck, Dean K.; and Schnetzka, Harold R., 4,554,463, Cl. 307-252.00H.
Winter, Rudolph R.; and Propst, Verle V., 4,553,313, Cl. 29-568.000.

Borrman, Bo; and Puggioli, Roberto, to AB Asea Atom. Flexible, annular metallic sealing device. 4,553,764, Cl. 277-226.000.

Bosnak, John J., to Whelen Engineering Company, Inc. Method of and apparatus for the testing of warning systems. 4,554,533, Cl. 340-514.000.

Bostolas, Carol: *See*—
Botsolas, Chris J., 4,553,308, Cl. 29-450.000.

Botsolas, Chris J., to Bostolas, Carol. Pipe fitting cover and method for covering pipe fittings. 4,553,308, Cl. 29-450.000.

Boussemart, Jean-Pierre; Bressand, Rene; and Pascal, Roger, to Salomon S.A. Safety ski binding. 4,553,772, Cl. 280-628.000.

Boutevin, Bernard; Deiss, Willy-Jean; Maliszewicz, Marc; and Pietrasanta, Yves, to Societe de Vente de l'Aluminium Pechiney. Method of preparing telomers which can be cross-linked by light. 4,554,373, Cl. 560-192.000.

Bowling, Clarence C. Process for coating rice seed with calcium peroxide by chemical reaction on the seed. 4,554,171, Cl. 427-4.000.

Bowman, George A., to Honeywell Inc. Wireless receiver having crystal filter at outputs of preamplifier. 4,554,678, Cl. 455-286.000.

Boyce, Peter H.: *See—*
Coffee, Ronald A.; Bennett, Peter C.; Houghton, Leonard E.; Johnson, Graham C.; Sommerville, John A.; Boyce, Peter H.; and Currall, William J. P., 4,553,702, Cl. 239-690.000.

Boyer, Kim L., to AT&T Bell Laboratories. Tandem adaptive echo canceler arrangement. 4,554,417, Cl. 179-170.200.

Boyer, Robert D.: *See—*
Provost, Lawrence A.; and Boyer, Robert D., 4,553,421, Cl. 72-402.000.

Brademeyer, David L., to General Motors Corporation. Wheel cylinder assembly with proportioner. 4,553,471, Cl. 91-173.000.

Brandstetter, Franz: *See—*
Reimann, Horst; Ziegler, Walter; Brandstetter, Franz; Theysohn, Rainer; and Pflueger, Richard, 4,554,320, Cl. 525-183.000.

Brandt, Kim: *See—*
Huffman, James; Brandt, Kim; and Doutre, Alton G., 4,553,892, Cl. 414-121.000.

Branz, Michael A., to Kysor Industrial Corporation. Refrigeration monitor and alarm system. 4,553,400, Cl. 62-127.000.

Bratt, Richard G.: *See—*
Katz, Lawrence H.; Wells, Douglas M.; and Bratt, Richard G., 4,554,626, Cl. 364-200.000.

Bratton, Kenneth L.: *See—*
Suomala, John E.; Bratton, Kenneth L.; Bergsten, Sten E.; Savic, Nicolas M.; and Gardner, E. Boyd, 4,554,000, Cl. 65-129.000.

Brauch, Robert B.; and Mihovch, John, to Singer Company, The. Control mechanism in a sewing machine for pattern and buttonhole sewing. 4,553,491, Cl. 112-465.000.

Braughler, J. Mark; and Hall, Edward D., to Upjohn Company, The. Use of high doses of derivatives of 6α-methylprednisolone for the acute treatment of stroke syndrome. 4,554,271, Cl. 514-179.000.

Braun, Moritz; Kaufmann, Anna; and Muller, Edwin, to BBC Brown, Boveri & Company Limited. Cathodic, gas- and liquid-permeable current collector. 4,554,063, Cl. 204-254.000.

Braun, Steve W., to Tetra Tech, Inc. Offset voltage correction network for instantaneous floating point amplifier. 4,554,511, Cl. 330-9.000.

Braven, James: *See—*
Brown, Leslie; Braven, James; and Rhead, Michael M., 4,554,077, Cl. 210-656.000.

Brehm, Gustav, to Retech AG. Device for producing twist-crimped threads. 4,553,382, Cl. 57-284.000.

Brekka, Thomas T.: *See—*
Langley, Dennis C.; and Brekka, Thomas T., 4,553,843, Cl. 356-375.000.

Bressand, Rene: *See—*
Boussemart, Jean-Pierre; Bressand, Rene; and Pascal, Roger, 4,553,772, Cl. 280-628.000.

Bressier, Peter: *See—*
Urion, Kenard E.; and Bressier, Peter, 4,553,711, Cl. 242-55.300.

Bresson, Clarence R.: *See—*
Kimble, Kenneth B.; Mark, Harold W.; and Bresson, Clarence R., 4,554,068, Cl. 209-167.000.
Kimble, Kenneth B.; Mark, Harold W.; and Bresson, Clarence R., 4,554,108, Cl. 260-455.00A.

Bretl, Wayne E.: *See—*
Tentler, Michael; Walker, David L.; Bretl, Wayne E.; and Williams, Gregory A., 4,554,581, Cl. 358-120.000.

Brewster, Albert L. Thread gauge for measuring thread pitch diameters. 4,553,337, Cl. 33-199.00R.

Bricknell, Rodger H., to General Electric Company. Fluorescent lamp with iron-nickel bimetal filament switch. 4,554,526, Cl. 337-379.000.

Bricmont & Associates, Inc.: *See—*
Bricmont, Francis H., 4,553,925, Cl. 431-178.000.

Bricmont, Francis H., to Bricmont & Associates, Inc. Flow distribution header system. 4,553,925, Cl. 431-178.000.

Bridges, Charles D.: *See—*
Jennings, Charles E.; Bridges, Charles D.; and King, Warren D., 4,553,589, Cl. 166-53.000.

Bridgestone Corporation: *See—*
Yoda, Yasutada; Sueyasu, Seisuke; and Futamura, Shoji, 4,553,918, Cl. 425-46.000.

Bridgestone Tire Company Limited: *See—*
Matsumoto, Kenji; and Suzuki, Yasuo, 4,553,579, Cl. 152-450.000.
Mukae, Makito; and Oshima, Tsuginori, 4,553,894, Cl. 414-331.000.

Briggs, Thomas V. Float means for connecting the winch line of a boat trailer to a boat. 4,553,897, Cl. 414-559.000.

Brilman, Albert; and Koops, Geert, to Hollandse Signaalapparaten B.V. Side-lobe suppressing unit for a pulse radar apparatus. 4,554,548, Cl. 343-379.000.

British-American Tobacco Company Limited: *See—*
Krywiczanin, Wladyslaw H.; and Lumsden, William, 4,553,712, Cl. 242-58.000.
Stewart-Cox, Adrian R., 4,553,555, Cl. 131-110.000.

British Gas Corporation: *See—*
Cox, Robert W.; Jones, Derek A.; Walker, David L.; and Hands, David, 4,553,930, Cl. 432-120.000.

Brock, George W.: *See—*
Grimm, M. Andreas; and Brock, George W., 4,554,217, Cl. 428-469.000.

Brocklehurst, John C.: *See—*
Hickey, David S.; and Brocklehurst, John C., 4,553,959, Cl. 604-96.000.

Brogi, Mario: *See—*
Ceresara, Sergio; and Brogi, Mario, 4,554,407, Cl. 174-128.00S.

Broken Hill Proprietary Company Limited, The: *See—*
Liberts, Sandra; Creer, Jack G.; and Mole, Thomas, 4,554,393, Cl. 585-322.000.

Brooks, Daryl G., to Kent-Moore Corporation. Boring tool with fluid feed. 4,553,883, Cl. 408-130.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Imaizumi, Mamoru; and Kojima, Yasumichi, 4,553,860, Cl. 400-68.000.

Broughton, Amos W. Separator for immiscible fluid mixture. 4,554,074, Cl. 210-519.000.

Brouwer Turf Equipment Limited: *See—*
Arnold, William T., 4,553,606, Cl. 172-19.000.

Brown, Alfred: *See—*
Huang, Wann-Sheng; and Brown, Alfred, 4,553,595, Cl. 166-278.000.

Brown, Christopher R., to Westinghouse Brake and Signal Co., Ltd. Arrangement for testing the operability of a semiconductive device. 4,554,507, Cl. 324-158.0SC.

Brown, Douglas E.; and Matthews, William, to United States of America, Navy. Oil filled towed array hose without couplings. 4,554,650, Cl. 367-154.000.

Brown, Kenneth L. Dowel cutter and sizer. 4,553,575, Cl. 144-12.000.

Brown, Leslie; Braven, James; and Rhead, Michael M., to Devon County Council, a part interest. Method and apparatus for monitoring sewage treatment efficiency and determining sewage sources. 4,554,077, Cl. 210-656.000.

Brown, Ronald: *See—*
Summers, Frank V.; Meissner, David C.; and Brown, Ronald, 4,553,742, Cl. 266-156.000.

Brundage, Robert W.; and Swatty, Gene. Solenoid controlled flow valve. 4,553,732, Cl. 251-30.010.

Brundage, Robert W. Solenoid controlled valve. 4,553,735, Cl. 251-129.160.

Brunet, Jean-Louis. Medical syringe. 4,553,962, Cl. 604-198.000.

Bryant-Jeffries, Keith C.; Dickie, Hugh G.; and Vaughan, Eric V., to International Business Machines Corporation. Rotor for a dynamoelectric machine and method of making same. 4,553,320, Cl. 29-598.000.

BS&B Safety Systems, Inc.: *See—*
Short, Edward H., III, 4,553,559, Cl. 137-68.00R.

Budden, Renke: *See—*
Kehrbach, Wolfgang; Wegener, Joachim; Kuehl, Ulrich; Budden, Renke; and Buschmann, Gerd, 4,554,274, Cl. 514-239.000.

Budnik, James M.: *See—*
Gregory, Joseph D.; and Budnik, James M., 4,553,853, Cl. 374-25.000.

Budrikis, Zigmantas L.; and Netravali, Arun N., to AT&T Bell Laboratories. Method and system for controlling the interconnecting of a plurality of local data networks. 4,554,656, Cl. 370-85.000.

Buehler, Ernest: *See—*
Chai, Bruce H.; Buehler, Ernest; and Flynn, John J., 4,554,136, Cl. 422-209.000.

Bugianesi, Robert L.: *See—*
Ponpipom, Mitree M.; Shen, Tsung-Ying; and Bugianesi, Robert L., 4,554,349, Cl. 536-55.000.

Bupp, James R.; Lemon, Gary K.; Markovich, Voya; Sambucetti, Carlos J.; Tisdale, Stephen L.; and Trevitt, Donna J., to International Business Machines Corporation. Method for conditioning a surface of a dielectric substrate for electroless plating. 4,554,182, Cl. 427-304.000.

Burger, William R.; Hutton, James E.; and Silverberg, Morton, to Xerox Corporation. Recirculative document inverter. 4,553,828, Cl. 355-3.0BE.

Burgess, Glenn A.: *See—*
Wong, Paul P.; Lippold, John B.; and Burgess, Glenn A., 4,553,474, Cl. 98-1.500.

Burke, Thomas W.; Welch, Robert A.; Schmoyer, Kevin S.; and Bauman, Bernard D., to Air Products and Chemicals, Inc. Method of removing built-up layers of organic coatings. 4,554,025, Cl. 134-17.000.

Burke, Timothy M.: *See—*
Smith, Paul F.; Schorman, Eric; Burke, Timothy M.; and Lynk, Charles N., Jr., 4,554,677, Cl. 455-54.000.

Burkel, Rainer; and Peter, Cornelius, to Robert Bosch GmbH. Vehicle tire pressure monitoring system. 4,554,528, Cl. 340-58.000.

Burlington Industries, Inc.: *See—*
Crocker, Charles L.; Wallace, Michael; and Powell, Lee, 4,553,384, Cl. 57-406.000.
Gamblin, Rodger L., 4,554,219, Cl. 428-667.000.

Burns, James A., to Becton, Dickinson and Co. Automatic retractable lancet assembly. 4,553,541, Cl. 128-314.000.

Burroughs Corporation: *See—*
Bannister, Richard J., 4,554,661, Cl. 371-15.000.
Bell, John L., 4,554,628, Cl. 364-200.000.
Sellars, Graham P., 4,554,600, Cl. 360-77.000.

Burson, Kyle L.; Early, Scott H.; and Ganesan, Apparajan, to AT&T Laboratories. CMOS Operational amplifier. 4,554,515, Cl. 330-261.000.

Buschbom, Floyd E.; and Hansen, Glen D., to Veda, Inc. Apparatus for tensioning a belt. 4,553,664, Cl. 198-814.000.

Buscher, John H., to Eastman Machine Company. Guided lifting apparatus. 4,553,328, Cl. 33-32.00G.

Buschmann, Ernst; Zeeh, Bernd; Jung, Johann; and Sauter, Hubert, to BASF Aktiengesellschaft. Phenylpropylammonium salts, their manu-

facture and agents containing these compounds. 4,554,006, Cl. 71-76.000.

Buschmann, Ernst: *See*—
Zech, Bernd; Ammermann, Eberhard; Buschmann, Ernst; and Pommer, Ernst-Heinrich, 4,554,285, Cl. 514-383.000.

Buschmann, Gerd: *See*—
Kehrbach, Wolfgang; Wegener, Joachim; Kuehl, Ulrich; Budden, Renke; and Buschmann, Gerd, 4,554,274, Cl. 514-239.000.

Bushman, Stanley C., to Minnesota Mining and Manufacturing Company. Spectrally-sensitized imaging system. 4,554,238, Cl. 430-258.000.

Bussco Engineering, Inc.: *See*—
Clark, Ralph, 4,554,615, Cl. 361-412.000.

Butin, Henri: *See*—
Deman, Pierre; and Butin, Henri, 4,554,668, Cl. 375-1.000.
Deman, Pierre; and Butin, Henri, 4,554,669, Cl. 375-1.000.

Butterworth, George A. M.; Evans, William M.; and Goldner, Howard J., to American Hospital Supply Corporation. Sterilization container formed of nonwoven material. 4,553,669, Cl. 206-439.000.

Byrd, James V., Jr.; and Mints, Danny K., to Halliburton Company. Hydra-pneumatic load sensor and signal system. 4,553,880, Cl. 406-23.000.

C F Braun & Co.: *See*—
Grotz, Bernard J.; Parnkopf, Fiske O.; and Prescott, G. Robert, 4,554,135, Cl. 422-148.000.

Caines, R. Scott, to American Hoechst Corporation. Polyester film primed with organic acid salts. 4,554,200, Cl. 428-207.000.

Calderini, Leonardo: *See*—
Primati, Marco; and Calderini, Leonardo, 4,553,343, Cl. 38-33.000.

Camco, Incorporated: *See*—
Logan, Francis D., 4,553,310, Cl. 29-517.000.

Cameron Iron Works, Inc.: *See*—
Kilmoyer, James E., 4,553,759, Cl. 277-12.000.

Campillo, Christian: *See*—
Bernard, Jean; Beyl, Jean J. A.; Campillo, Christian; and le Faou, Daniel, 4,553,771, Cl. 280-615.000.

Canadian Patents and Development Limited-Societe Canadienne des Brevets et D'Exploitation Limtee : *See*—
So, Eddy, 4,554,513, Cl. 330-85.000.

Candiotti, Marcello: *See*—
Marini, Paolo; and Candiotti, Marcello, 4,554,213, Cl. 428-418.000.

Cane, Michael R., to BICC Public Limited Company. Separable electrical connectors with fluid escape path. 4,553,807, Cl. 339-94.00R.

Canestaro, Michael J.; Kaschak, Ronald A.; McBride, Donald G.; and Seraphim, Donald P., to International Business Machines Corporation. Method for plating from an electroless plating bath. 4,554,184, Cl. 427-345.000.

Canon Kabushiki Kaisha: *See*—
Ayata, Naoki; and Konuki, Tadashi, 4,553,834, Cl. 355-53.000.
Harada, Yuji, 4,553,820, Cl. 350-331.00R.
Hirooka, Masaaki, 4,554,180, Cl. 427-248.100.
Imai, Eiichi; Takenouchi, Masanori; Uchiyama, Masaki; and Suematsu, Koshi, 4,554,234, Cl. 430-122.000.
Ishikawa, Shozo; Sakai, Kiyoshi; Mabuchi, Minoru; Watanabe, Katsunori; and Kitahara, Makoto, 4,554,231, Cl. 430-59.000.
Kato, Masatake; and Hashimoto, Shigeru, 4,553,823, Cl. 350-463.000.
Kuroki, Yoichi; Yoshinari, Yukihiro; and Hiraga, Ryozo, 4,553,845, Cl. 356-400.000.
Sakai, Shinji; Kawabata, Takashi; and Harada, Yoshihito, 4,554,674, Cl. 377-17.000.
Sakaki, Hiroyuki; Tanoue, Tomonori; and Nojiri, Hidetoshi, 4,553,317, Cl. 29-572.000.
Tobe, Kazumitsu, 4,554,602, Cl. 360-14.200.
Yoshida, Tadashi, 4,554,592, Cl. 358-257.000.

Cape Gate Fence & Wire Works (Proprietary) Limited: *See*—
Bailey, Alan, 4,553,740, Cl. 256-33.000.

Cappos, David J.; and Klunk, Thomas M., to AMP Incorporated. Floating locator head for application tooling. 4,553,322, Cl. 29-739.000.

Capurka, Zbynek A., to Motorola, Inc. Reference pulse verification circuit adaptable for engine control. 4,553,426, Cl. 73-116.000.

Caputo, Jeffrey C.: *See*—
Caputo, Mario A.; and Caputo, Jeffrey C., 4,553,414, Cl. 70-58.000.

Caputo, Mario A.; and Caputo, Jeffrey C. Theft prevention device for automobile audio equipment. 4,553,414, Cl. 70-58.000.

Carey, Clarence W. Collar fastener. 4,553,291, Cl. 24-55.000.

Carl Freudenberg, Firma: *See*—
Blesing, Dieter; Habel, Erich; and Walther, Hans J., 4,553,761, Cl. 277-152.000.
Hoelzer, Helmut, 4,553,762, Cl. 277-152.000.

Carl, William P.: *See*—
Erzell, Bobby R.; Carl, William P.; and Mod, William A., 4,554,112, Cl. 260-543.00F.

Carlson, Curtis R., to RCA Corporation. Spatial prefilter for variable-resolution sampled imaging systems. 4,554,585, Cl. 358-209.000.

Carmel, Yuval: *See*—
Read, Michael E.; Carmel, Yuval; Chu, Kwo R.; and Ganguly, Achintya K., 4,554,484, Cl. 315-4.000.

Carmichael, Richard W.: *See*—
Pugh, James G.; and Carmichael, Richard W., 4,553,789, Cl. 303-54.000.

Carpenter, John A., to Bethlehem Steel Corporation. Fail-closed, tight seal gas safety valve system. 4,553,731, Cl. 251-27.000.

Carpenter Technology Corporation: *See*—
DeBold, Terry A.; Magee, John H., Jr.; and Schmidt, Norman B., 4,554,028, Cl. 148-38.000.

Carre , Jean-Jacques; and Pressaco, Pierre, to Societe Anonyme D.B.A. Brake motor with automatic adjustment. 4,553,646, Cl. 188-196.0BA.

Carrier Corporation: *See*—
Napolitano, James E.; Bolton, Theodore S.; and McHale, John P., 4,553,405, Cl. 62-262.000.

Carroll, William G., to Imperial Chemical Industries PLC. Polymer-modified polyols. 4,554,306, Cl. 524-377.000.

Carson, John C., Jr.: *See*—
Schebece, Frank; and Carson, John C., Jr., 4,554,097, Cl. 252-542.000.

Carter, Charles G.; and Lee, David L., to Stauffer Chemical Company. O-Aryloxyphenoxyacyl-α-N,N,-dialkylaminooximes and herbicidal methods of use. 4,554,014, Cl. 71-94.000.

Carter, Russell P., Jr.: *See*—
Chung, James Y. J.; Carter, Russell P., Jr.; and Neuray, Dieter, 4,554,315, Cl. 525-67.000.

Casey, Steven M. Method for making barrier structure. 4,553,875, Cl. 404-6.000.

Caste, Thomas K., to General Electric Company. Multiple key with invisible hinge. 4,554,426, Cl. 200-159.00B.

Castellano, Thomas P.; and Mandel, Nathan, to Mandel, Nathan. Repeating firearm trigger mechanism. 4,553,468, Cl. 89-140.000.

Catalysts & Chemicals Industries Co., Ltd.: *See*—
Fuchikami, Jun; and Yano, Takemithu, 4,554,263, Cl. 502-66.000.

Caterpillar Tractor Co.: *See*—
Boggs, Roger L., 4,553,790, Cl. 305-12.000.
Reed, Lyle T.; and Olt, Arthur E., Jr., 4,553,760, Cl. 277-12.000.
Ruseff, Walter Z.; and Schimpf, James E., 4,553,904, Cl. 417-218.000.

Caxton Doss-Desouza, Argus F.: *See*—
Embrey, Derek M.; Webb, Stuart F.; Bickford, Ian J.; and Caxton Doss-Desouza, Argus F., 4,554,422, Cl. 200-61.910.

CDP, Ltd.: *See*—
Ecer, Gunes M., 4,554,130, Cl. 419-8.000.

Celanese Corporation: *See*—
Chenevey, Edward C., 4,554,119, Cl. 264-85.000.
Sinker, Stephen M.; Baron, Joseph J., Jr.; Rupp, Raymond W.; Doerr, Marvin L.; and McChesney, Charles E., 4,554,328, Cl. 525-437.000.
Sinker, Stephen M.; and McChesney, Charles E., 4,554,329, Cl. 525-437.000.
Stackman, Robert W.; Summerville, Richard H., deceased; and Summerville, James E., Jr., heir, 4,554,377, Cl. 564-205.000.

CEM Corporation: *See*—
Collins, Michael J., 4,554,132, Cl. 422-68.000.

Cena, Arnulfo Q. Rotary piston machine. 4,553,503, Cl. 123-18.00A.

Central Glass Company Limited: *See*—
Tasaka, Yoshihiro; Nakamichi, Toshihiro; and Katsuhara, Yutaka, 4,554,382, Cl. 568-404.000.

Centro Sperimentale Metallurgico SpA: *See*—
Marini, Paolo; and Candiotti, Marcello, 4,554,213, Cl. 428-418.000.

Century Electric, Inc.: *See*—
Sisk, Hollis D., 4,554,475, Cl. 310-208.000.

Ceradelli, Vittorio: *See*—
Chelin, Cesare; and Ceradelli, Vittorio, 4,554,590, Cl. 358-248.000.

Ceresara, Sergio; and Brogi, Mario, to La Metalli Industriale S.p.A. Superconducting conductors having a stabilizing sheath brazed to its matrix and a process for making the same. 4,554,407, Cl. 174-128.00S.

Chagnon, Mark S.: *See*—
Whitehead, Roy A.; Chagnon, Mark S.; Groman, Ernest V.; and Josephson, Lee, 4,554,088, Cl. 252-62.540.

Chagnot, Bruce J.; and Wood, James G., to Stirling Technology, Inc. Self pressurizing, crank-type Stirling engine having reduced loading of displacer drive linkages. 4,553,392, Cl. 60-517.000.

Chai, Bruce H.; Buehler, Ernest; and Flynn, John J., to Allied Corporation. Hydrothermal apparatus for synthesizing crystalline powders. 4,554,136, Cl. 422-209.000.

Chalupka, Georg: *See*—
Muschelknautz, Edgar; Rink, Norbert; and Chalupka, Georg, 4,553,996, Cl. 65-4.400.

Chambers, Gregory R.; and Bennett, James G., Jr., to General Electric Company. Catalyst and method for ortho-alkylation of hydroxyaromatic compounds. 4,554,267, Cl. 502-340.000.

Chambers, Gregory R.: *See*—
Bennett, James G.; and Chambers, Gregory R., 4,554,266, Cl. 502-344.000.

Champion International Corporation: *See*—
Hain, Paul O., 4,554,127, Cl. 264-324.000.

Champon, Jacques; Maurice, Bruno; and Roumeguere, Michel, to Commissariat a l'Energie Atomique. Temperature-compensated Zener diode. 4,554,568, Cl. 357-13.000.

Chan, Tsiu C.; Mai, Chao; and Hswe, Myint, to Mostek Corporation. Method for making a semiconductor device. 4,553,314, Cl. 29-571.000.

Chance, James F.: *See*—
Jerson, Donald D.; and Chance, James F., 4,554,470, Cl. 310-45.000.

Chandler Evans Inc.: *See*—
Noell, Godwin L.; and Sundberg, Jack G., 4,553,914, Cl. 418-69.000.

Chandra, Rangasami S.; and Orlando, Franklin P., to FMC Corporation. Load cell clamping apparatus. 4,553,872, Cl. 403-25.000.

Chandrasekhar, Hosekere S., to RCA Corporation. Method of making integrated PNP and NPN bipolar transistors and junction field effect transistor. 4,553,318, Cl. 29-577.00C.

Chang, Clarence D.; and Chu, Cynthia T. W., to Mobil Oil Corporation. Olefin upgrading with ferrosilicate zeolite catalyst. 4,554,396, Cl. 585-531.000.

Chang, Hou-min; Joyce, Thomas W.; Kirk, Thomas K.; and Huynh, Van-Ba, to North Carolina State University. Process of degrading chloro-organics by white-rot fungi. 4,554,075, Cl. 210-611.000.

Changle, Joseph F.: *See*—
Grunert, Kurt A.; and Changle, Joseph F., 4,554,421, Cl. 200-43.150.

Charbonnages de France: *See*—
Dreuilhe, Jacques; and Landet, Paul-Victor, 4,553,502, Cl. 122-4.00D.

Charbonnier, Jacques: *See*—
Bailey, Ronald D.; Charbonnier, Jacques; and Chotard, Michel, 4,553,649, Cl. 188-340.000.

Chasse, Dennis W.; and Clark, Vincent M., to Honeywell Information Systems Inc. Digital pulse stretcher. 4,554,445, Cl. 235-472.000.

Chatterjee, Pallab K., to Texas Instruments Incorporated. Self-aligned stacked CMOS. 4,554,572, Cl. 357-42.000.

Chaudot, Gerard. Safety system for removing any risk of carrying liquids to the nose of the flare or to the vent-hole during burning or dispersion of the gases associated with production. 4,553,989, Cl. 55-177.000.

Cheesman, Anthony. Tear-open compartmented cat litter container. 4,553,671, Cl. 206-611.000.

Chelin, Cesare; and Ceradelli, Vittorio, to Ing. C. Olivetti & C., S.p.A. Device for positioning video display unit. 4,554,590, Cl. 358-248.000.

Chembakaffery, George M.: *See*—
Zapletal, Henry; Wentzek, Horst F.; and Chembakaffery, George M., 4,553,324, Cl. 29-822.000.
Zapletal, Henry; Wentzek, Horst F.; and Chembakaffery, George M., 4,553,572, Cl. 140-92.800.

Chen, Peter C.; and Au, Alex, to Fairchild Camera & Instrument Corporation. Static RAM cell. 4,554,644, Cl. 365-154.000.

Chenevey, Edward C., to Celanese Corporation. Process for heat treating shaped articles of poly {[benzo(1,2-d:4,5-d')bisthiazole-2,6-diyl]-1,4-phenylene}, its cis isomer or mixtures thereof. 4,554,119, Cl. 264-85.000.

Cheng, Paul J., to Phillips Petroleum Company. Method for producing carbon black. 4,554,149, Cl. 423-450.000.

Chevee, Gerard: *See*—
Noirel, Yves M.; Vardo, Jean-Claude; and Chevee, Gerard, 4,554,660, Cl. 370-94.000.

Chevron Research Company: *See*—
Herkenhoff, Earl F.; and Ostrander, William J., 4,554,649, Cl. 367-68.000.
Jordan, Roland H., 4,554,070, Cl. 210-109.000.
Loh, William, 4,554,010, Cl. 71-88.000.
Loh, William, 4,554,011, Cl. 71-88.000.
Marcantonio, Paul J., 4,554,138, Cl. 423-53.000.

Chiba, Iwane; Fujiwara, Junji; Kuwamoto, Hiroshi; izushi, Tomoya; Muto, Toshimi; and Toyama, Haruji, to Nippon Kokan Kabushiki Kaisha; and Yushiro Chemical Industry Co., Ltd. Metal processing composition. 4,554,087, Cl. 252-49.900.

Chigusa, Yoshiki, to Sumitomo Electric Industries, Ltd. Process for producing image fiber. 4,553,995, Cl. 65-4.200.

Chikamasa, Hiroshi; and Noda, Shinji, to Fuji Photo Film Co., Ltd. Drying method. 4,554,177, Cl. 427-130.000.

Child, Jonathan E.: *See*—
Albinson, Kenneth R.; and Child, Jonathan E., 4,554,065, Cl. 208-59.000.

Childs, John J., to Sprague Electric Company. AC Metallized film capacitor. 4,554,612, Cl. 361-306.000.

Chiozza, Enrico, to Uniderm Farmaceutici s.n.c. Intrauterine contraceptive device. 4,553,536, Cl. 128-130.000.

Chiu, Kin-Chung R.: *See*—
Bean, John C.; Chiu, Kin-Chung R.; and Poate, John M., 4,554,045, Cl. 156-613.000.

Chlosta, Wolfgang; and Riegger, Wolfgang, to Bodenseewerk Perkin-Elmer & Co., GmbH. Electric heater for a rotating sample vessel container in a sampling device for gas chromatography. 4,554,436, Cl. 219-385.000.

Cho, James R.: *See*—
Barabas, Eugene S.; and Cho, James R., 4,554,311, Cl. 524-808.000.
Barabas, Eugene S.; and Cho, James R., 4,554,312, Cl. 524-808.000.

Chorvat, Robert J.; and Desai, Bipinchandra N., to G. D. Searle & Co. 2,5-Pyrrolidinedione derivatives useful as antiarrhythmic agents. 4,554,353, Cl. 546-208.000.

Chotard, Michel: *See*—
Bailey, Ronald D.; Charbonnier, Jacques; and Chotard, Michel, 4,553,649, Cl. 188-340.000.

Christoffersson, Evert. Venetian blind. 4,553,580, Cl. 160-172.000.

Chu, Cynthia T. W.: *See*—
Chang, Clarence D.; and Chu, Cynthia T. W., 4,554,396, Cl. 585-531.000.

Chu, Kwo R.: *See*—
Read, Michael E.; Carmel, Yuval; Chu, Kwo R.; and Ganguly, Achintya K., 4,554,484, Cl. 315-4.000.

Chung, Daniel A.: *See*—
Liggett, Paul E.; and Chung, Daniel A., 4,554,300, Cl. 523-466.000.

Chung, James Y. J.; Neuray, Dieter; and Witman, Mark W., to Mobay Chemical Corporation. Thermoplastic molding compositions. 4,554,314, Cl. 525-67.000.

Chung, James Y. J.; Carter, Russell P., Jr.; and Neuray, Dieter, to Mobay Chemical Corporation. Thermoplastic resinous blend and a method for its preparation. 4,554,315, Cl. 525-67.000.

Chyung, Kenneth; Schultz, Peter C.; and Taylor, Mark P., to Corning Glass Works. Fiber reinforced glass/glass-ceramic mirror blanks. 4,554,197, Cl. 428-113.000.

Ciardiello, Giovanni; and Augusti, Ferdinando, to Ing. C. Olivetti & C., S.p.A. Apparatus for scanning and digitally processing half-tone images. 4,554,594, Cl. 358-283.000.

Ciba-Geigy Corporation: *See*—
Babler, Fridolin; and Munk, Kurt, 4,554,094, Cl. 252-518.000.
Boger, Manfred; and Drabek, Jozef, 4,554,290, Cl. 514-487.000.
Dittrich, Volker, 4,554,270, Cl. 514-120.000.
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,554,016, Cl. 71-105.000.
Howell, Frederick H., 4,554,379, Cl. 564-374.000.
Maul, Rudolf; Stephan, Hans; and Wolf, Walter, 4,554,368, Cl. 556-91.000.
Raisin, Helmut; and Teutelink, Bernard C., 4,553,976, Cl. 8-639.000.
Su, Kai C., 4,553,975, Cl. 8-507.000.

Cibulsky, Albinas A.: *See*—
Kilmartin, David F.; Kilmartin, David F., Jr.; and Cibulsky, Albinas A., 4,553,657, Cl. 194-4.00R.

Cicognani, Mario: *See*—
Tangorra, Giorgio; Cicognani, Mario; and Macchiarulo, Vincenzo, 4,553,952, Cl. 474-153.000.

Cieslowski, Thomas C.: *See*—
Bercier, John R.; Cieslowski, Thomas C.; Delaquila, Gary E.; Leone, James W.; and Mauersberger, Paul H., 4,553,345, Cl. 40-576.000.

Ciga-Geigy Corporation: *See*—
Wehner, Wolfgang; and Grade, Reinhardt, 4,554,367, Cl. 556-20.000.

Ciliberti, David F.; and Lippert, Thomas E., to Westinghouse Electric Corp. Filtering system and method of using same. 4,553,986, Cl. 55-68.000.

Citizen Watch Co., Ltd.: *See*—
Nakai, Toshihiko, 4,553,867, Cl. 400-323.000.

Citta, Richard W., to Zenith Electronics Corporation. Two-way CATV system with AML commands. 4,554,579, Cl. 358-86.000.

Clark, Ralph, to Busco Engineering, Inc. Electrically conducting panel and method of making same. 4,554,615, Cl. 361-412.000.

Clark, Vincent M.: *See*—
Chasse, Dennis W.; and Clark, Vincent M., 4,554,445, Cl. 235-472.000.

Clark, William S., to USM Corporation. Component placement head control. 4,553,323, Cl. 29-741.000.

Clarke, David E., to Lever Brothers Company. Opaque general-purpose cleaning composition comprising alcohol esterified resin copolymers. 4,554,099, Cl. 252-551.000.

Clover Mfg. Co., Ltd.: *See*—
Okada, Hidekazu, 4,553,410, Cl. 66-117.000.

Coca-Cola Company, The: *See*—
King, Eddie W.; Duke, Herman K.; and Summerville, Don S., 4,554,419, Cl. 200-5.00A.

Coers, Don H.: *See*—
Wheat, Don R.; and Coers, Don H., 4,553,524, Cl. 126-25.00R.

Coffee, Ronald A.; Bennett, Peter C.; Houghton, Leonard E.; Johnson, Graham C.; Sommerville, John A.; Boyce, Peter H.; and Currall, William J. P., to Imperial Chemical Industries PLC. Spraying system. 4,553,702, Cl. 239-690.000.

Cohen, Mitchell S.: *See*—
Afzali-Ardakani, Ali; Cohen, Mitchell S.; Pennington, Keith S.; and Sachdev, Krishna G., 4,554,562, Cl. 346-135.100.

Cohen, Richard L., to Allied Corporation. Directional filter for filtering ambient light. 4,553,818, Cl. 350-276.00R.

Cole, James B., to Boeing Company, The. Variable-camber airfoil. 4,553,722, Cl. 244-219.000.

Cole Sewell Corporation: *See*—
Ralph, James L., 4,553,361, Cl. 52-209.000.

Coleman, William M., III; and Edmondson, Morris S., to Dow Chemical Company, The. Polymerization of olefins employing a catalyst containing a titanium component derived from alicyclic hydroxy compounds. 4,554,333, Cl. 526-127.000.

Colgate-Palmolive Company: *See*—
Klisch, Stephen C.; Lai, Kuo-Yann; and Robbins, Clarence R., 4,554,098, Cl. 252-547.000.
Schebece, Frank; and Carson, John C., Jr., 4,554,097, Cl. 252-542.000.

Collens, Richard. Medical reminder device. 4,553,670, Cl. 206-534.000.

Collett, Geoffrey K.; Martin-Jones, Christopher B.; Tapner, Peter N.; Commander, David J.; Gilbey, Mark S.; and Berks, Robert S., to USM Corporation. Lockstitch sewing machine. 4,553,490, Cl. 112-38.000.

Collins, Albert L.: *See*—
Powell, Bert R.; and Collins, Albert L., 4,553,352, Cl. 47-71.000.

Collins, Galen R., to Fuji Photo Film Co., Ltd. Delta modulated communication system. 4,554,671, Cl. 375-30.000.

Collins, Michael J., to CEM Corporation. Analytical apparatus for determining volatiles, solids, and solvent extractables in a sample. 4,554,132, Cl. 422-68.000.

Collins, Raymond L., Jr. Ignitor probe assembly and ceramic insulator therefor. 4,553,927, Cl. 431-264.000.

Colombo, Charles D. Awning type window frame for installing either rigid glazing pane or flexible glazing sheet. 4,553,360, Cl. 52-202.000.

Commander, David J.: *See*—
Collett, Geoffrey K.; Martin-Jones, Christopher B.; Tapner, Peter N.; Commander, David J.; Gilbey, Mark S.; and Berks, Robert S., 4,553,490, Cl. 112-38.000.

Commissariat a l'Energie Atomique: *See*—
Champon, Jacques; Maurice, Bruno; and Roumeguere, Michel, 4,554,568, Cl. 357-13.000.
Herbreteau, Louis; and Le Roy, Alain, 4,554,546, Cl. 343-5.00W.
Kerviel, Hildebert; and Poulard, Serge, 4,554,031, Cl. 149-19.300.

Commonwealth Scientific and Industrial Research Organisation: *See*—
Liberts, Sandra; Creer, Jack G.; and Mole, Thomas, 4,554,393, Cl. 585-322.000.

Commonwealth Scientific and Industrial Research Organization: *See*—
Curtain, Cyril C.; and Snook, Harvey, 4,554,390, Cl. 568-870.000.

Comnix Kabushiki Kaisha: *See*—
Sasano, Nakamichi, 4,554,415, Cl. 179-170.00G.

Compagnie Francaise des Petroles: *See*—
Vigouroux, Georges; Fort, Gilbert; and Soleille, Louis, 4,553,600, Cl. 166-343.000.

Conn, Shepard; and Kushner, Arnold. Fluid-expansible contraceptive tampon and applicator. 4,553,965, Cl. 604-286.000.

Connors, Frank T., to Symons Corporation. Multi-panelled concrete forming structure for forming flat curved walls. 4,553,729, Cl. 249-40.000.

Conoco Inc.: *See*—
Doerr, Richard E., 4,553,881, Cl. 406-115.000.

Consolidated Freightways, Inc.: *See*—
Markland, Richard D., 4,553,782, Cl. 296-1.00S.

Constantinescu, Spiridon. Aquatic camera. 4,553,494, Cl. 114-66.000.

Construction Robotics, Inc.: *See*—
Deike, Robert F., 4,553,358, Cl. 52-98.000.

Construction Technology, Inc.: *See*—
Levine, Richard W., 4,554,635, Cl. 364-475.000.

Conway, Michael W.: *See*—
Almond, Stephen W.; and Conway, Michael W., 4,553,601, Cl. 166-308.000.

Cook, Joel M.; Flamm, Daniel L.; Mayer, Edward H.; and Seiler, Bernard C., to AT&T Bell Laboratories; and AT&T Technologies. Downstream apparatus and technique. 4,554,047, Cl. 156-643.000.

Cooke, Edward I., to BICC Public Limited Company. Optical cable element manufacture. 4,554,116, Cl. 264-1.500.

Cookson, Alan H., to United States of America, Energy. Particle trap for compressed gas insulated transmission systems. 4,554,399, Cl. 174-14.00R.

Cooper, Raymond M. Fishing lure. 4,553,348, Cl. 43-42.060.

Coppa, Gianni; and Grego, Giorgio, to Cselt Centro Studi E Laboratori Telecomunicazioni, S.p.A. Method of and apparatus for measuring thickness and refractive index of transparent bodies. 4,553,841, Cl. 356-349.000.

Copple, Warren B.: *See*—
Ezis, Andre; and Copple, Warren B., 4,554,117, Cl. 264-67.000.

Copyer Kabushiki Kaisha: *See*—
Ishikawa, Shozo; Sakai, Kiyoshi; Mabuchi, Minoru; Watanabe, Katsunori; and Kitahara, Makoto, 4,554,231, Cl. 430-59.000.

Cordis Corporation: *See*—
Pohndorf, Peter J.; and Wesner, Walter H., 4,553,961, Cl. 604-175.000.

Core Industries, Inc.: *See*—
Feterl, Leon G., 4,553,898, Cl. 414-573.000.

Corley, Larry S., to Shell Oil Company. Heat-curable compositions comprising an epoxy resin, an amine and a sulfonium salt. 4,554,342, Cl. 528-90.000.

Cormio, Ignazio, to Videocolor S.A. Process and device ensuring the fixation on the neck of a cathode tube of the deviation collar of the tube. 4,554,589, Cl. 358-248.000.

Cornett, Frank N., to HRB-Singer, Inc. Frequency shift keyed demodulation system. 4,554,509, Cl. 329-105.000.

Corning Glass Works: *See*—
Chyung, Kenneth; Schultz, Peter C.; and Taylor, Mark P., 4,554,197, Cl. 428-113.000.

Correll, Charles. Visual aid apparatus for viewing objects beneath water surface. 4,553,819, Cl. 350-319.000.

Corrigan, John J., to Anton/Bauer, Inc. Modular light assembly. 4,554,621, Cl. 362-382.000.

Corsello, Thomas. Multiple position bookstand. 4,553,728, Cl. 248-452.000.

Cosenza, Frank J.; and Yamamoto, Albert K., to Rexnord Inc. Installation tool, tangless helically coiled insert. 4,553,302, Cl. 29-240.500.

Cosper, David R.; and McKay, Gretchen L., to Nalco Chemical Company. Aqueous hydrotrope solutions for paint detackifiers. 4,554,026, Cl. 134-38.000.

Cousin, Michael J.; Hill, Larry O.; and Justice, Rhonda G., to Mead Corporation, The. Ink jet recording sheet having a bicomponent cationic recording surface. 4,554,181, Cl. 427-261.000.

Coville, Patrick: *See*—
Bailleul, Gilles; and Coville, Patrick, 4,554,434, Cl. 219-216.000.

Cox, Clayton E. Cornerboard for pallets. 4,553,484, Cl. 108-55.100.

Cox, Robert W.; Jones, Derek A.; Walker, David L.; and Hands, David, to British Gas Corporation; and Rubber and Plastics Research Assoc. of GB. Method and apparatus for the heat treatment of materials. 4,553,930, Cl. 432-120.000.

Coyle, Robert W., to Rohm and Haas Company. Methacrylic acid separation. 4,554,054, Cl. 203-15.000.

Cramer, Carl V., Sr. Non-reversible multiple-refrigeration-cycle solar apparatus including a variable directing valve mechanism. 4,553,402, Cl. 62-235.100.

Creasy, Charles K.; and Hendley, Eustis. Plastic fence assembly. 4,553,741, Cl. 256-66.000.

Creer, Jack G.: *See*—
Liberts, Sandra; Creer, Jack G.; and Mole, Thomas, 4,554,393, Cl. 585-322.000.

Crespy, Serge. Holder combined with instrument. 4,553,926, Cl. 431-253.000.

Crissy, Charles F.; and Holmes, Paul M., to Aeroquip Corporation. Captive dunnage fitting. 4,553,888, Cl. 410-144.000.

Crocker, Charles L.; Wallace, Michael; and Powell, Lee, to Burlington Industries, Inc. Take-up shaft guard for open-end yarn spinning machine. 4,553,384, Cl. 57-406.000.

Crone, John M., Jr.; Kuhlmann, Erven J.; and McMahon, Matthew A., to Texaco Inc. Method and apparatus for the production of exhaust gas filters. 4,553,499, Cl. 118-428.000.

Crosio, Pasquale, to Ing. C. Olivetti & C., S.p.A. Device for mounting a daisywheel on a typewriter. 4,553,868, Cl. 400-356.000.

Cross, Michael; and Gordon, John T., to Westinghouse Electric Corp. Two wire heater regulator control circuit having continuous temperature sensing excitation independent of the application of heater voltage. 4,554,439, Cl. 219-497.000.

Cross, William T.; and Ramshaw, Colin, to Imperial Chemical Industries PLC. Centrifugal heat pump. 4,553,408, Cl. 62-476.000.

Cselt Centro Studi E Laboratori Telecomunicazioni, S.p.A.: *See*—
Coppa, Gianni; and Grego, Giorgio, 4,553,841, Cl. 356-349.000.

Cummins Engine Company, Inc.: *See*—
Duggal, Vinod K.; Lyford-Pike, Edward J.; and Smith, Edward D., 4,553,504, Cl. 123-25.00J.

Curl, Barry J.: *See*—
Hilton, Graham H.; and Curl, Barry J., 4,553,846, Cl. 356-429.000.

Currall, William J. P.: *See*—
Coffee, Ronald A.; Bennett, Peter C.; Houghton, Leonard E.; Johnson, Graham C.; Sommerville, John A.; Boyce, Peter H.; and Currall, William J. P., 4,553,702, Cl. 239-690.000.

Curtain, Cyril C.; and Snook, Harvey, to Commonwealth Scientific and Industrial Research Organization; and Betatene Limited. Method for harvesting algae. 4,554,390, Cl. 568-870.000.

Dabi, Shmuel, to Personal Products Company. Resilient cellular polymers from amine terminated poly(oxyalkylene) and polyfunctional epoxides. 4,554,297, Cl. 521-178.000.

Daghe, Joseph L.; and Sands, Robert E., to Mueller Co. Relief valve assembly for use with backflow preventers. 4,553,563, Cl. 137-494.000.

Dahlgren, Robert W.; and Dennis, William H., to Phillips Petroleum Company. Gas chromatography. 4,553,985, Cl. 55-67.000.

Daicel Chemical Industries, Ltd.: *See*—
Yuki, Heimei; and Okamoto, Yoshio, 4,554,323, Cl. 525-272.000.
Yuki, Heimei; and Okamoto, Yoshio, 4,554,334, Cl. 526-177.000.

Daidotokushuko Kabushikikaisha: *See*—
Hattori, Seiji, 4,553,301, Cl. 29-237.000.

Daimler-Benz Aktiengesellschaft: *See*—
Lindenmaier, Klaus; and Zieger, Josef, 4,553,520, Cl. 123-557.000.

Daiwa Golf Co., Ltd.: *See*—
Yamada, Magoichi, 4,553,755, Cl. 273-171.000.

Dall'Aglio, Carlo: *See*—
Golinelli, Guido; and Dall'Aglio, Carlo, 4,553,332, Cl. 33-561.000.

DallaPiazza, Dennis G.: *See*—
Glover, Gary H.; DallaPiazza, Dennis G.; and Pelc, Norbert J., 4,554,633, Cl. 364-414.000.

Dammig, Joachim: *See*—
Bock, Erich; Lovas, Kurt; Promoli, Johann-Christian; and Dammig, Joachim, 4,553,709, Cl. 242-47.010.

Dana Corporation: *See*—
Eley, James M., 4,553,915, Cl. 418-102.000.
Mora, Erwin P., 4,554,607, Cl. 361-104.000.

Danforth, Donald W., to Bolton-Emerson, Inc. Fiber length indicating apparatus and method. 4,554,051, Cl. 162-49.000.

Daniele, Joseph J.; and Yip, Kwok-leung, to Xerox Corporation. Multichannel electro-optic printer for printing plural image lines at once. 4,554,561, Cl. 346-108.000.

Darley, Henry M.: *See*—
Houston, Theodore W.; Tasch, Al F., Jr.; Darley, Henry M.; and Fu, Horng S., 4,553,316, Cl. 29-571.000.

Darnell, Joseph W.: *See*—
Blood, Mark L.; Darnell, Joseph W.; Fergeson, Allen D.; and Rouse, David M., 4,554,659, Cl. 370-88.000.

Data General Corporation: *See*—
Holland, Charles J.; Holberger, Kenneth D.; Epstein, David I.; Reilly, Paul; and Rosen, Josh, 4,554,627, Cl. 364-200.000.
Katz, Lawrence H.; Wells, Douglas M.; and Bratt, Richard G., 4,554,626, Cl. 364-200.000.

Davies, Robert B.; Miller, Ira; and Dotson, Robert N., to Motorola, Inc. Propagation delay generator. 4,554,464, Cl. 307-265.000.

Davis, Dennis W.: *See*—
Spratt, Brendan J.; Pryor, David J.; Jones, James B., Jr.; Davis, Dennis W.; and Frazier, Richard V., Jr., 4,554,547, Cl. 343-7.300.

Davis, Richard K., to Austin, Ormand R. Datum reference for tool touch probe system. 4,554,495, Cl. 318-572.000.

Davis, William M.: *See*—
Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; Foroulis, Z. Andrew; and Baldwin, Francis P., 4,554,326, Cl. 525-354.000.

Dawson, Raymond L.; Dodd, Clayton; Harrell, Bobby E.; and Lee, Grady E., to Manville Service Corporation. Centrifugal carton tester. 4,553,438, Cl. 73-830.000.

Day, Robert S.: *See—*
Bennett, George R.; and Day, Robert S., 4,553,660, Cl. 198-425.000.

DBM Industries Limited: *See—*
Perrella, Guido; and Thompson, William E., 4,553,583, Cl. 164-458.000.

De La Rue Systems Limited: *See—*
Hilton, Graham H.; and Curl, Barry J., 4,553,846, Cl. 356-429.000.

Dearman, Timothy C. Pipefitter's scribing and spacing tool. 4,553,305, Cl. 29-272.000.

Debes, Michael H.; and Keenan, Paul C., III, to Du Pont de Nemours, E. I., and Company. Automatic control system for X-ray film cassette loader and unloader apparatus. 4,553,369, Cl. 53-55.000.

de Boer, Jan: *See—*
Bertram, Leo; Schemmann, Hugo; and de Boer, Jan, 4,554,471, Cl. 310-49.00R.

DeBold, Terry A.; Magee, John H., Jr.; and Schmidt, Norman B., to Carpenter Technology Corporation. Large warm worked, alloy article. 4,554,028, Cl. 148-38.000.

De Bree, Hans: *See—*
Ruijten, Henri M.; De Bree, Hans; Van Amsterdam, Peter H.; and Wiegers, Elbert, 4,554,071, Cl. 210-198.200.

De Choudhury, Pranabesh, to Elliott Turbomachinery Company, Inc. Damper and spring shaft support assembly. 4,553,855, Cl. 384-99.000.

De Cortanze, Andre , to Elf France. Supporting arm assembly for a driving wheel of an automotive vehicle. 4,553,622, Cl. 180-227.000.

Deere & Company: *See—*
Koeller, David L., 4,554,431, Cl. 219-121.0PP.
Teich, Christian M., 4,553,950, Cl. 464-176.000.

Deguchi, Naoyasu: *See—*
Hayashi, Yasuhiro; Deguchi, Naoyasu; Yamagami, Hiroyuki; Goda, Kensuke; and Hasebe, Kazunori, 4,554,245, Cl. 430-567.000.

Degussa Aktiengesellschaft: *See—*
vonBebenburg, Walter, deceased; Heese, Joachim; Engel, Jurgen; and Thiele, Kurt, 4,554,281, Cl. 514-353.000.

DeHart, Arnold O.: *See—*
Bierlein, John C.; and DeHart, Arnold O., 4,553,856, Cl. 384-276.000.

Deike, Robert F., to Construction Robotics, Inc. Post anchor. 4,553,358, Cl. 52-98.000.

Deiss, Willy-Jean: *See—*
Boutevin, Bernard; Deiss, Willy-Jean; Maliszewicz, Marc; and Pietrasanta, Yves, 4,554,373, Cl. 560-192.000.

De Jaeger, Roger: *See—*
Abou Chakra, Taher; and De Jaeger, Roger, 4,554,113, Cl. 260-927.00N.

Dejaifve, Pierre: *See—*
Lambert, Jean C.; Barre, Guy; Dejaifve, Pierre; and Bidan, Gerard, 4,554,292, Cl. 518-728.000.

De Jong, Tim: *See—*
Haisma, Jan; Larsen, Poul K.; De Jong, Tim; Van der Veen, Johannes F.; Douma, Willem A. S.; and Saris, Frans W., 4,554,030, Cl. 148-175.000.

Delaquila, Gary E.: *See—*
Bercier, John R.; Cieslowski, Thomas C.; Delaquila, Gary E.; Leone, James W.; and Mauersberger, Paul H., 4,553,345, Cl. 40-576.000.

Delaruelle, Dale H.: *See—*
Nichols, Richard E.; and Delaruelle, Dale H., 4,553,723, Cl. 246-167.00R.

Dellario, Patrick R., to American Standard Inc. Pneumatic plunger-type valve. 4,553,736, Cl. 251-334.000.

DeLuca, Hector F.; Schnoes, Heinrich K.; Lee, Seok H.; and Phelps, Mary E., to Wisconsin Alumni Research Foundation. Method for preparing 1α-hydroxyvitamin D compounds. 4,554,106, Cl. 260-397.200.

Deman, Pierre; and Butin, Henri, to Thomson-CSF. Frequency-hopping radio communications system. 4,554,668, Cl. 375-1.000.

Deman, Pierre; and Butin, Henri, to Thomson CSF. Frequency jump radiocommunications system with interburst redundancy. 4,554,669, Cl. 375-1.000.

de Marchi, Jean-Louis: *See—*
Pradier, Serge; and de Marchi, Jean-Louis, 4,553,292, Cl. 24-70.0SK.

Demonte, Filippo; and Figini, Mario, to Ing. C. Olivetti & C., S.p.A. Electronic typewriter. 4,553,866, Cl. 400-144.200.

Demoute, Jean-Pierre: *See—*
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,554,361, Cl. 549-302.000.

Dempsey, Jock D.: *See—*
Dempsey, John D.; and Dempsey, Jock D., 4,553,453, Cl. 81-58.000.

Dempsey, John D.; and Dempsey, Jock D. Stepless wrench including quick release mechanism. 4,553,453, Cl. 81-58.000.

Denlinger, Timothy L.: *See—*
Gaspar, Richard A.; Bastian, Donald G.; and Denlinger, Timothy L., 4,554,044, Cl. 156-510.000.

Dennis, Lawrence D.: *See—*
Flick, Robert H.; and Dennis, Lawrence D., 4,554,423, Cl. 200-293.000.

Dennis, William H.: *See—*
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Swain, James C.; and Thomas, David L., 4,553,905, Cl. 417-222.000.

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Digonnet, Michel J. F.: *See—*
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Dillon, Gary E., to International Business Machines Corp. Edge-triggered latch circuit conforming to LSSD rules. 4,554,466, Cl. 307-272.00A.

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Dillon, Philip L., to Reliance Electric Company. Negative resistance compensated transformer. 4,554,504, Cl. 323-356.000.

Distin, Robert G., Jr.; and Lang, Thomas J., to Advanced Energy Concepts '81 Ltd. Pin controlled retainer for epicyclic transmission. 4,553,451, Cl. 74-805.000.

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Dixon, Barry M., to Xerox Corporation. Copiers. 4,553,831, Cl. 355-26.000.

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Dixon, Samuel, Jr.: *See*—
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Ziller, Robert E., 4,553,368, Cl. 53-51.000.

Dr. Ing. h.c.F. Porsche AG: *See*—
Bofinger, Gerd; Stelter, Norbert; and Wuest, Rainer, 4,553,654, Cl. 192-0.076.
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Dodd, Clayton: *See*—
Dawson, Raymond L.; Dodd, Clayton; Harrell, Bobby E.; and Lee, Grady E., 4,553,438, Cl. 73-830.000.

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Sinker, Stephen M.; Baron, Joseph J., Jr.; Rupp, Raymond W.; Doerr, Marvin L.; and McChesney, Charles E., 4,554,328, Cl. 525-437.000.

Doerr, Richard E., to Conoco Inc. Slurry pump tram control apparatus. 4,553,881, Cl. 406-115.000.

Dohi, Hidemi; and Matsuda, Hideaki, to Okura Kogyo Kabushiki Kaisha. Modified two-part type adhesive composition. 4,554,301, Cl. 524-210.000.

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Dolikian, Arman V., to Motorola, Inc. Guard tone capture method. 4,554,542, Cl. 340-825.760.

Dong, Walter; and Petty, Walter L., to Shell Oil Company. Cyanohydrination catalyst comprising non-crystalline or amorphous dipeptide. 4,554,102, Cl. 260-112.50R.

Donogues, Jacques P.: *See*—
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Dougherty, Delford O., to St. Luke's Hospital. Drop dispenser. 4,553,686, Cl. 222-212.000.

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Dover Corporation: *See*—
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Ezzell, Bobby R.; Carl, William P.; and Mod, William A., 4,554,112, Cl. 260-543.00F.
Klun, Robert T.; Murchison, Craig B.; and Hucul, Dennis A., 4,554,391, Cl. 570-231.000.
Nafziger, John L.; Rader, Laura A.; and Seward, Irwin J., Jr., 4,554,378, Cl. 564-332.000.
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Dow Corning Corporation: *See*—
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Haluska, Loren A.; and Molzahn, Marcelle G., 4,554,354, Cl. 548-110.000.
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Drabek, Jozef: *See*—
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Draney, Robert G.: *See*—
Youngers, Stephen A.; and Draney, Robert G., 4,553,448, Cl. 74-480.00R.

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Drexhage, Gerrit K. Tip-up bed and post tensioned bedding retainer. 4,553,278, Cl. 5-136.000.

DSL Dynamic Sciences Limited: *See*—
Schmid, Hartmut, 4,554,221, Cl. 429-1.000.

Dubach, Fredi: *See*—
Votteler, Arno; Lanuzzi, Max; Dubach, Fredi; and Schreiner, Herbert, 4,553,483, Cl. 108-4.000.

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Duggal, Vinod K.; Lyford-Pike, Edward J.; and Smith, Edward D., to Cummins Engine Company, Inc. Means and method for alternate fuel fumigation in internal combustion engines. 4,553,504, Cl. 123-25.00J.

Duke, George B., Jr.; and Pierce, S. Mark. Lounge chair cover. 4,553,785, Cl. 297-229.000.

Duke, Herman K.: *See*—
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Duncan, Ronnie J. Faucet and clamping mechanism. 4,553,277, Cl. 4-643.000.

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Ruijten, Henri M.; De Bree, Hans; Van Amsterdam, Peter H.; and Wiegers, Elbert, 4,554,071, Cl. 210-198.200.

Du Pont de Nemours, E. I., and Company: *See*—
Aikens, Paul W., 4,553,805, Cl. 339-75.0MP.
Baker, William B.; and Betsill, Harry E., 4,554,639, Cl. 364-556.000.
Debes, Michael H.; and Keenan, Paul C., III, 4,553,369, Cl. 53-55.000.
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Duracell Inc.: *See*—
Goodman, John T., 4,553,419, Cl. 72-349.000.

Durand, William W.; Jain, Anil K.; and Peterson, Ronald E., to Honeywell Inc. Tunable Fabry-Perot filter. 4,553,816, Cl. 350-166.000.

Durham, Marion E. Earth boring machine. 4,553,612, Cl. 175-122.000.

Dwyer, John J. Replaceable deflectors for the sprinkler heads of automatic fire extinguishing systems. 4,553,603, Cl. 169-38.000.

Dynagraphic Merchandising Corp.: *See*—
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Dynamit Nobel AG: *See*—
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Dyson, Jack E.: *See*—
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E.G.O. Elektro-Gerate Blanc u. Fischer: *See*—
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E. R. Squibb & Sons, Inc.: *See*—
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Eagle-Picher Industries, Inc.: *See*—
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Early, Scott H.: *See*—
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Eastern Foam Products, Inc.: *See*—
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Eastman Kodak Company: *See*—
Gourley, Robert N., 4,554,348, Cl. 534-768.000.
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Jackson, Winston J., Jr.; and Watkins, Joseph J., 4,554,343, Cl. 528-274.000.
Jackson, Winston J., Jr.; and Watkins, Joseph J., 4,554,344, Cl. 528-283.000.
Petke, Frederick D.; Ramsey, Charles W.; and McConnell, Richard L., 4,554,303, Cl. 524-277.000.

Eastman Machine Company: *See*—
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Eaton Corporation: *See*—
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Ebata, Yoshikazu: *See*—
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Eberhardt, H. Alfred, to Diesel Kiki Co., Ltd. Floating portable pump. 4,553,902, Cl. 417-34.000.

Ebert, Thomas P. Method for installing a whirlpool bath on an in-place bathtub. 4,553,299, Cl. 29-157.00R.

Ecer, Gunes M., to CDP, Ltd. Consolidation of a part from separate metallic components. 4,554,130, Cl. 419-8.000.

Eckhardt, Erich; Schmitt, Karl; Grone, Wolfgang; and Binev, Binio, to Linde Aktiengesellschaft. Vehicles with differential speed steering. 4,553,620, Cl. 180-6.480.

Edgren, David, to Alza Corporation. Process for preparing osmotic device. 4,553,973, Cl. 604-892.000.

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Edmondson, Morris S.: *See*—
Coleman, William M., III; and Edmondson, Morris S., 4,554,333, Cl. 526-127.000.

Edvardsen, Einar. Method of converting a cable in the ground into a closed guiding track for insertion of new conductors. 4,553,877, Cl. 405-154.000.

Edwards, Wallace. Color reproduction process. 4,554,241, Cl. 430-301.000.

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Ehrmann, Peter, to Freudenberg, Carl. Seal ring having an axis parallel intermediate ring. 4,553,763, Cl. 277-153.000.

Eibe, Werner W., to White Consolidated Industries, Inc. Self-contained inflatable crown roll. 4,553,296, Cl. 29-113.00R.

Eibe, Werner W., to White Consolidated Industries, Inc. Hydromechanical inflatable crown roll. 4,553,297, Cl. 29-113.0AD.

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Eitel, Frederick G., to United States of America, Air Force. Machining a cooled cylindrical optic to compensate for pressure distortion. 4,553,457, Cl. 82-1.00C.

Ejnar Jensen & Son Maskinfabrik A/S: *See—*
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Elam, Carl M.; and Leavy, Dale A. Video and audio blanking system. 4,554,584, Cl. 358-165.000.

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Elf France: *See—*
De Cortanze, Andre , 4,553,622, Cl. 180-227.000.

Elionix, Inc.: *See—*
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Elliott Turbomachinery Company, Inc.: *See—*
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Ellis Industries, Inc.: *See—*
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Ellis, Lawrence D., to Ellis Industries, Inc. Truck latch. 4,553,895, Cl. 414-401.000.

EMA Company: *See—*
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EMAG Mashinenfabrik GmbH: *See—*
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Embrey, Derek M.; Webb, Stuart F.; Bickford, Ian J.; and Caxton Doss-Desouza, Argus F., to AB Electronic Components Limited. Gearbox indicator switch. 4,554,422, Cl. 200-61.910.

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Engel, Jurgen: *See—*
vonBebenburg, Walter, deceased; Heese, Joachim; Engel, Jurgen; and Thiele, Kurt, 4,554,281, Cl. 514-353.000.

Engel, Richard C. Portable wood cutting device. 4,553,463, Cl. 83-796.000.

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Enomoto, Hiroshi: *See—*
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Ensminger, Dale, to Battelle Memorial Institute. Bonding capsules. 4,554,034, Cl. 156-69.000.

Enthone, Incorporated: *See—*
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Enviro-Spray Systems, Inc.: *See—*
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Epson Corporation: *See—*
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Erickson, Nancy D., to Ende Company. Substrate with differential adhesion. 4,554,193, Cl. 428-40.000.

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Erskine, James C., Jr.: *See—*
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Etablissement Public de Diffusion dit "Telediffusion de France": *See—*
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Etablissements Francois Salomon et Fils: *See—*
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Ethyl Corporation: *See—*
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Scull, Herbert M.; and Laurent, Sebastian M., 4,554,141, Cl. 423-245.000.
Seemuth, Paul D., 4,554,387, Cl. 568-704.000.
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Ethyl Petroleum Additives, Inc.: *See—*
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Eurobreva Engineering Trust: *See—*
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Evans, Brian R.: *See—*
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Evans, John L.; Gehrig, George F.; and Speers, Jerry M., to Exxon Production Research Co. Method and apparatus for monitoring fluid flow between a borehole and the surrounding formations in the course of drilling operations. 4,553,429, Cl. 73-155.000.

Evans, William M.: *See—*
Butterworth, George A. M.; Evans, William M.; and Goldner, Howard J., 4,553,669, Cl. 206-439.000.

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Jackson, Theodore A., 4,553,726, Cl. 248-297.100.
Plummer, Jeffrey J.; and Adleman, Larry G., 4,553,738, Cl. 254-358.000.

Extraktionstechnik Gesellschaft Fur Anlagenbau mbH: *See—*
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Barthomeuf, Denise M.; and Rosenfeld, Daniel D., 4,554,398, Cl. 585-828.000.
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Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; Foroulis, Z. Andrew; and Baldwin, Francis P., 4,554,326, Cl. 525-354.000.
Pieters, Wim J. M.; and Okumura, Yoshiharu, 4,554,260, Cl. 502-61.000.
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Ezis, Andre; and Copple, Warren B., to Ford Motor Company. Method of forming dense ceramic bodies. 4,554,117, Cl. 264-67.000.

Ezure, Yoji: *See—*
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Fag Kugelfischer Georg Schafer (KGaA): *See—*
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Fairchild Camera & Instrument Corporation: *See—*
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Fajt, Ludvik: *See—*
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Falconer, Roy D.: *See—*
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Fallos, George, to Bell & Howell Company. Coupling mechanism. 4,553,652, Cl. 192-18.00R.

Fanuc Limited: *See—*
Komiya, Hidetsugu; Inoue, Michiya; and Saitoh, Yoshiyuki, 4,554,462, Cl. 307-140.000.
Nozawa, Ryoichiro; Kawamura, Hideaki; and Sasaki, Takao, 4,554,497, Cl. 318-636.000.

Farge, Daniel: *See—*
Le Roy, Pierre; Farge, Daniel; Moutonnier, Claude; Peyronel, Jean-Francois; and Plau, Bernard, 4,554,350, Cl. 544-22.000.

Farkas, Tibor; Vigh, Laszlo ; Horvath, Ibolya; Nagy nee Vanicsek, Aniko ; Foglein, Ferenc; Meszaros, Annamaria; and Toth, Istvan, to Eszakmagyarorszagi Vegyimuvek. Plant tissue cultivation process. 4,554,252, Cl. 435-240.000.

Farrar, David; and Hawe, Malcolm, to Allied Colloids Limited. Water soluble polymers. 4,554,298, Cl. 523-336.000.

Farrar, David; and Hawe, Malcolm, to Allied Colloids Limited. Water soluble polymers and dispersions containing them. 4,554,307, Cl. 524-425.000.

Fasel, Herman P.: *See—*
Kapur, Jagdish C.; and Fasel, Herman P., 4,554,104, Cl. 260-245.20R.

Fassbender, Rolf: *See—*
Liebert, Karl-Heinz; Tischer, Werner; and Fassbender, Rolf, 4,553,390, Cl. 60-384.000.
Tischer, Werner; Liebert, Karl-Heinz; and Fassbender, Rolf, 4,553,389, Cl. 60-384.000.

Fassett, Matthew; Toth, John F.; Lewis, Michael L.; and Miccioli, William F., to Raytheon Company. Microstrip antenna with circular ring. 4,554,549, Cl. 343-700.0MS.

Faublas, Serge: *See—*
Pinede, Edouard; Faublas, Serge; and Stevens, Peter F., 4,554,413, Cl. 179-99.00M.

Faulkner, Richard D.; and Rhoads, James L., to RCA Corporation. Electron discharge device having a ceramic member with means for reducing luminescence therein. 4,554,481, Cl. 313-533.000.

Faure, Louis H.; Townsend, Dana R.; and Walsh, Thomas J., to International Business Machines Corporation. Modular test probe. 4,554,506, Cl. 324-158.00P.

Feigt, Ingmar; Heinrich, Hans; and Kempter, Karl, to Siemens Aktiengesellschaft. Apparatus for recording X-ray images. 4,554,453, Cl. 250-327.200.

Fell, Edwin H., to Westinghouse Electric Corp. Universal dowel pin system. 4,553,334, Cl. 33-181.00R.

Fergeson, Allen D.: *See—*
Blood, Mark L.; Darnell, Joseph W.; Fergeson, Allen D.; and Rouse, David M., 4,554,659, Cl. 370-88.000.

Ferguson, Keith; and McClees, Nancy, to E. R. Squibb & Sons, Inc. Wound care and drainage system having hand access port. 4,553,967, Cl. 604-317.000.

Ferrand, Gerard: *See—*
Bayssat, Michel; Ferrand, Gerard; and Depin, Jean-Claude, 4,554,273, Cl. 514-221.000.

Ferranti, plc: *See—*
Sillitto, Hillary G., 4,554,448, Cl. 250-216.000.

Feterl, Leon G., to Core Industries, Inc. Swingably mounted truck hopper. 4,553,898, Cl. 414-573.000.

Fey, Kenneth C.; and Lefler, Harold V., III, to Dow Corning Corporation. Liquid copolymeric organosiloxanes. 4,554,331, Cl. 525-478.000.

Fiat Auto S.p.A.: *See—*
Barbero, Mario, 4,553,354, Cl. 49-431.000.

Fiat Products Incorporated: *See—*
Paradis, Robert C., 4,553,276, Cl. 4-612.000.

Fibrestone Incorporated: *See—*
Sudrabin, David A., 4,554,124, Cl. 264-263.000.

Fierkens, Richardus H. J.; and Pas, Ireneus J. T. M., to ASM Fico Tooling, b.v. Method and apparatus for touch-free lead bending. 4,553,420, Cl. 72-380.000.

Figge, Dieter: *See—*
Artz, Gerd; Figge, Dieter; Hoster, Thomas; and Potschke, Jurgen, 4,553,582, Cl. 164-432.000.

Figini, Mario: *See—*
Demonte, Filippo; and Figini, Mario, 4,553,866, Cl. 400-144.200.

Filipowicz, Anthony H.: *See—*
Rubin, Gene L.; Filipowicz, Anthony H.; and Valenza, Frank, 4,553,344, Cl. 40-152.000.

Fingermatrix, Inc.: *See—*
Marcus, Daniel H., 4,553,837, Cl. 356-71.000.

Finike Italiana Marposs S.p.A.: *See—*
Golinelli, Guido; and Dall'Aglio, Carlo, 4,553,332, Cl. 33-561.000.

Finnieston, Alan; and Zagorski, Joseph B. Thigh brace. 4,553,535, Cl. 128-88.000.

Fischer, Bruno; and Andretta, Angelo, to Micafil AG. Method for connecting the ends of stator windings to the stator supply terminals. 4,553,319, Cl. 29-596.000.

Fischer, Herbert; Kickhofen, Botho; and Vaubel, Ekkehard, to Max-Planck-Gesellschaft zur. Wound treating agent. 4,554,156, Cl. 424-81.000.

Fischer, Hermann: *See—*
Greiner, Harry M.; Fischer, Hermann; and Simeth, Claus, 4,553,478, Cl. 101-426.000.

Fischle, Martin: *See—*
Barlian, Reinhold; and Fischle, Martin, 4,553,432, Cl. 73-336.000.

Fisher, Ralph H. Reversible cycle heating and cooling system. 4,553,401, Cl. 62-160.000.

Fitzgerald, Gary W.; Gulibon, Robert S.; and Penrod, Paula M., to Kennametal Inc. Boring tool and method of reducing vibrations therein. 4,553,884, Cl. 408-143.000.

Flakt Aktiebolag: *See—*
Petersson, Rolf, 4,553,340, Cl. 34-114.000.

Flamm, Daniel L.: *See—*
Cook, Joel M.; Flamm, Daniel L.; Mayer, Edward H.; and Seiler, Bernard C., 4,554,047, Cl. 156-643.000.

Flanagan, Maureen. Mathematical teaching device. 4,553,944, Cl. 434-191.000.

Flanigen, Edith M.: *See—*
Messina, Celeste A.; Lok, Brent M.; and Flanigen, Edith M., 4,554,143, Cl. 423-306.000.

Fletcher, Donald E.: *See—*
Anderson, Noel E.; Fletcher, Donald E.; Smagula, Michael S.; and Parker, Darrell S., 4,554,169, Cl. 426-576.000.

Fleuret, Daniel, to Thomson CSF. Method for the production of a multilayered capacitor block. 4,553,304, Cl. 29-25.420.

Flick, Robert H.; and Dennis, Lawrence D., to Westinghouse Electric Corp. Molded case circuit breaker with adjacent pole mechanisms spaced closer than adjacent terminals. 4,554,423, Cl. 200-293.000.

Flick, Robert H.; and Huffman, Walter K., to Westinghouse Electric Corp. Molded case circuit breaker with movable lower electrical contact. 4,554,427, Cl. 200-250.000.

Floris, Pier-Luigi; and O'Toole, Yvonne. Method and apparatus for obtaining electrical signals correlated with the position of a mass of mercury in instruments and the like. 4,554,535, Cl. 340-689.000.

Flynn, John J.: *See—*
Chai, Bruce H.; Buehler, Ernest; and Flynn, John J., 4,554,136, Cl. 422-209.000.

FMC Corporation: *See—*
Chandra, Rangasami S.; and Orlando, Franklin P., 4,553,872, Cl. 403-25.000.
Kazmierczak, Walter; and Assony, Edward M., 4,553,626, Cl. 180-307.000.
Scott, Junius D., 4,554,490, Cl. 318-130.000.
Uppgren, John J.; and Scott, James W., 4,553,581, Cl. 164-16.000.
Viitanen, Veikko K.; and Kreamer, William C., 4,553,373, Cl. 53-441.000.

Foglein, Ferenc: *See—*
Farkas, Tibor; Vigh, Laszlo ; Horvath, Ibolya; Nagy nee Vanicsek, Aniko ; Foglein, Ferenc; Meszaros, Annamaria; and Toth, Istvan, 4,554,252, Cl. 435-240.000.

Folch, Carlos M., to Bendiberica S.A. Hydro-pneumatic braking device. 4,553,644, Cl. 188-72.400.

Foley, Geoffrey M. T.; and Enck, Rudolph C., to Xerox Corporation. Electrophotographic imaging member with interface layer. 4,554,230, Cl. 430-58.000.

Forbus, Nancy P.; and Kaeding, Warren W., to Mobil Oil Corporation. Organophosphorus-treated zeolite catalysts for para-selective aromatics conversion. 4,554,394, Cl. 585-474.000.

Ford Motor Company: *See—*
Ezis, Andre; and Copple, Warren B., 4,554,117, Cl. 264-67.000.
Holubka, Joseph W.; and Dickie, Ray A., 4,554,188, Cl. 427-393.500.
Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., 4,554,332, Cl. 525-532.000.
Muller, George H., 4,554,527, Cl. 340-58.000.
Zinbo, Mikio; Jensen, Ronald K.; and Johnson, Milton D., 4,554,085, Cl. 252-46.600.

Foresman, Robert. Quick release tiller extension. 4,553,496, Cl. 114-144.00R.

Forney, Edgar W., Jr.; and Hogendobler, Richard S., to AMP Incorporated. Coaxial electrical connector for multiple outer conductor coaxial cable. 4,553,806, Cl. 339-94.00C.

Foroulis, Z. Andrew: *See—*
Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; Foroulis, Z. Andrew; and Baldwin, Francis P., 4,554,326, Cl. 525-354.000.

Fort, Gilbert: *See—*
Vigouroux, Georges; Fort, Gilbert; and Soleille, Louis, 4,553,600, Cl. 166-343.000.

Fory, Werner; Martin, Henry; and Pissiotas, Georg, to Ciba Geigy Corporation. Oxime derivatives for protecting plant crops. 4,554,016, Cl. 71-105.000.

Foster, Daniel S., to Foster Marine Products, Inc. Boat propulsion. 4,553,945, Cl. 440-51.000.

Foster Marine Products, Inc.: *See—*
Foster, Daniel S., 4,553,945, Cl. 440-51.000.

Fouin, Jean: *See—*
Galais, Michel; Sardain, Christian; Fouin, Jean; Arnaudeau, Marcel; and Morin, Pierre, 4,553,909, Cl. 417-369.000.

Fox, Sidney J.; Yeskel, Filip J.; and Zimmermann, William J., Jr., to International Business Machines Corporation. Universal thresholder/discriminator. 4,554,593, Cl. 358-282.000.

Framatome & Cie: *See—*
Dreuilhe, Jacques; and Landet, Paul-Victor, 4,553,502, Cl. 122-4.00D.
Le Dantec, Olivier J.; and Balage, Charly G., 4,553,889, Cl. 411-21.000.

Francel, Josef, to Owens-Illinois, Inc. Chemical resistant lead-free glass frit compositions. 4,554,258, Cl. 501-21.000.

Franke, John M., Sr., to Singer Company, The. Fabric clamping means for driven work folder. 4,553,745, Cl. 270-45.000.

Franklin, Brian; and Mader, Karl-Heinz, to Schott Glass Technologies, Inc. Low expansion, alkali-free borosilicate glass suitable for photomask applications. 4,554,259, Cl. 501-67.000.

Frazee, Ralph E., Jr.; and Smithgall, David H., Sr., to AT&T Technologies, Inc. Lightguide fiber spool changeover technique. 4,553,706, Cl. 242-18.00A.

Frazier, Kevin A.: *See—*
Renga, James M.; Periana-Pillai, Roy A.; and Frazier, Kevin A., 4,554,372, Cl. 560-161.000.

Frazier, Richard V., Jr.: *See—*
Spratt, Brendan J.; Pryor, David J.; Jones, James B., Jr.; Davis, Dennis W.; and Frazier, Richard V., Jr., 4,554,547, Cl. 343-7.300.

Frazita, Richard F., to Hazeltine Corporation. Asymmetric resonant waveguide aperture manifold. 4,554,551, Cl. 343-771.000.

Freepons, Donald E., to Melamine Chemicals, Inc. Fertilizer processes and compositions using s-triazines. 4,554,003, Cl. 71-28.000.

Freidinger, Roger M.: *See—*
Bock, Mark G.; and Freidinger, Roger M., 4,554,272, Cl. 514-219.000.

French, James C.: *See—*
Young, Cynthia A.; Schaumberg, John P.; Hokanson, Gerard C.; French, James C.; and Tunac, Josefino B., 4,554,162, Cl. 424-117.000.

Freudenberg, Carl: *See—*
Ehrmann, Peter, 4,553,763, Cl. 277-153.000.

Freund, Samuel M.; Maier, William B., II; Holland, Redus F.; and Beattie, Willard H., to United States of America, Energy. Photolytic separation of isotopes in cryogenic solution. 4,554,060, Cl. 204-157.10R.

Fric, Premysl: *See—*
Kasafirek, Evzen; Fric, Premysl; Slaby, Jan; and Roubalova, Alena, 4,554,100, Cl. 260-112.50R.

Frick Company: *See—*
Pillis, Joseph W., 4,553,911, Cl. 418-1.000.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Artz, Gerd; Figge, Dieter; Hoster, Thomas; and Potschke, Jurgen, 4,553,582, Cl. 164-432.000.

Frohbieter, Edwin H.: *See—*
Malchow, Gregory L.; and Frohbieter, Edwin H., 4,553,404, Cl. 62-262.000.

Fry, Thomas H. Solid waste processing. 4,553,977, Cl. 44-1.00D.

Fu, Horng S.: *See—*
Houston, Theodore W.; Tasch, Al F., Jr.; Darley, Henry M.; and Fu, Horng S., 4,553,316, Cl. 29-571.000.

Fuchikami, Jun; and Yano, Takemithu, to Catalysts & Chemicals Industries Co., Ltd. Catalysts for hydrotreating heavy oils. 4,554,263, Cl. 502-66.000.

Fuderer, Andrija, to Union Carbide Corporation. Enhanced hydrogen recovery from effluent gas streams. 4,553,981, Cl. 48-62.00R.

Fudickar, Harald; and Thies, Peter, to Wagener Schwelm GmbH & Co. Belt press with multiple press frames. 4,554,043, Cl. 156-502.000.

Fuji Photo Film Co., Ltd.: *See—*
Chikamasa, Hiroshi; and Noda, Shinji, 4,554,177, Cl. 427-130.000.
Collins, Galen R., 4,554,671, Cl. 375-30.000.
Hayashi, Yasuhiro; Deguchi, Naoyasu; Yamagami, Hiroyuki; Goda, Kensuke; and Hasebe, Kazunori, 4,554,245, Cl. 430-567.000.
Kanaoka, Takeshi; and Shimizu, Shigehisa, 4,553,833, Cl. 355-40.000.
Kanaoka, Takeshi; and Shimizu, Shigehisa, 4,554,560, Cl. 346-108.000.
Ohno, Shigeru; Kishimoto, Shinzo; and Yagihara, Morio, 4,554,242, Cl. 430-393.000.
Ono, Mitsunori; and Itoh, Isamu, 4,554,243, Cl. 430-543.000.
Taniguchi, Yutaka, 4,554,454, Cl. 250-327.200.
Umemura, Shizuo; and Kitamoto, Tatsuji, 4,554,089, Cl. 252-62.560.
Yamamoto, Nobuyuki; Ryoke, Katsumi; Tsuji, Nobuo; Higaki, Yuzo; and Okamura, Toshihisa, 4,554,220, Cl. 428-694.000.
Yamamuro, Kiyohiko; Iwasa, Yasuo; and Itoh, Isamu, 4,554,246, Cl. 430-611.000.
Yoneda, Junichi; and Igarashi, Akira, 4,554,566, Cl. 346-207.000.

Fuji Standard Research, Inc.: *See—*
Gomi, Shimpei; Arai, Tomio; Mogi, Fumio; Miura, Kunio; and Otani, Sugio, 4,554,148, Cl. 423-447.100.

Fuji Xerox Co., Ltd.: *See—*
Kimoto, Toshifumi; Todoh, Hidemasa; Itami, Teruhiko; and Saitoh, Koichi, 4,554,557, Cl. 346-74.400.
Saitoh, Hiroyuki; and Kurata, Masami, 4,554,583, Cl. 358-163.000.
Suzuki, Takanobu; Nakayama, Kenichiro; Takahashi, Izumi; and Sugiyama, Terumasa, 4,554,662, Cl. 371-20.000.

Fujii, Satoru: *See—*
Sudoh, Chuzoh; Hagita, Hyoji; and Fujii, Satoru, 4,553,416, Cl. 72-40.000.

Fujii, Tadashi: *See—*
Aruga, Tamotsu; Fujii, Tadashi; Murakami, Kakuji; and Akutsu, Eiichi, 4,554,555, Cl. 346-1.100.

Fujimoto, Teruo; Isono, Yoshinobu; and Miyaki, Yoshiyuki, to Toyo Soda Manufacturing Co., Ltd. Method for separating and purifying amino acid. 4,554,376, Cl. 562-554.000.

Fujimura, Syunichi; Oda, Eisuke; Hagiwara, Miyuki; and Morita, Youske, to Furukawa Electric Co., Ltd., The; and Japan Atomic Energy Research Institute. Method for manufacturing flame-retardant insulated wire and cable for nuclear power stations. 4,554,173, Cl. 427-120.000.

Fujinaga, Yasuhiro, to Shimadzu Corporation. Electronic balance with averaging feature for vibration error correction. 4,553,619, Cl. 177-185.000.

Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., to International Flavors & Fragrances Inc. Bicyclo tertiary hydroxyl carboxaldehyde. 4,554,384, Cl. 568-445.000.

Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., to International Flavors & Fragrances Inc. Tertiary hydroxyl carboxaldehydes, organoleptic uses thereof, and processes for producing same. 4,554,385, Cl. 568-496.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Takaya, Takao; Yasuda, Nobuyoshi; Tsutsumi, Hideo; and Matsuda, Keiji, 4,554,269, Cl. 514-35.000.

Fujitec Co., Ltd.: *See—*
Tsutsumi, Suteo; and Koh, Hiroshi, 4,554,459, Cl. 250-550.000.

Fujitsu Ten Limited: *See—*
Shiozaki, Syuji, 4,554,599, Cl. 360-69.000.

Fujiwara, Hitoshi: *See—*
Ikeda, Yoshito; Fujiwara, Hitoshi; Gomi, Yoshifumi; Matsuzawa, Masanao; and Hirashima, Yasuhito, 4,553,865, Cl. 400-124.000.

Fujiwara, Junji: *See—*
Chiba, Iwane; Fujiwara, Junji; Kuwamoto, Hiroshi; izushi, Tomoya; Muto, Toshimi; and Toyama, Haruji, 4,554,087, Cl. 252-49.900.

Fujiwara, Kunio; Katoo, Hisashi; Satoo, Fumihide; and Taki, Hirokazu, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for running moving object. 4,554,498, Cl. 318-640.000.

Fujiwara, Shigekazu: *See—*
Ooi, Kazushige; Fujiwara, Shigekazu; Yoshida, Nobuaki; and Sukegawa, Tsuneo, 4,554,587, Cl. 358-228.000.

Fujiwara, Takayoshi: *See—*
Sakano, Hajime; Ito, Akitoshi; Yano, Motoichi; Honda, Yasuhiro; and Fujiwara, Takayoshi, 4,554,316, Cl. 525-71.000.

Fukatsu, Yoshiaki: *See—*
Hattori, Katsuhide; Fukatsu, Yoshiaki; and Sakai, Hiroshi, 4,554,032, Cl. 149-21.000.

Fukuhara, Satoru: *See—*
Todokoro, Hideo; and Fukuhara, Satoru, 4,554,455, Cl. 250-305.000.

Fukuo, Koichi: *See—*
Ichida, Katsumi; Fukuo, Koichi; Araki, Junichi; and Machida, Isao, 4,553,473, Cl. 92-261.000.

Fukushi, Yutaka: *See—*
Ichikawa, Isamu; Fukushi, Yutaka; Kamata, Keiji; and Suzuki, Hikoshiro, 4,553,696, Cl. 236-49.000.

Funada, Fumiaki: *See—*
Ishii, Yutaka; Funada, Fumiaki; Takamatsu, Toshiaki; and Tomio, Wada, 4,553,821, Cl. 350-339.00R.

Funaki, Yuji; Oshita, Hirofumi; Yamamoto, Shigeo; Tanaka, Shizuya; and Kato, Toshiro, to Sumitomo Chemical Company, Limited. Geometrical isomer of 1-substituted-1-triazolylstyrenes, and their production and use as fungicide, herbicide and/or plant growth regulant. 4,554,007, Cl. 71-076.000.

Furman, Anatol, to International Business Machines Corporation. Multi-port register implementation. 4,554,645, Cl. 365-189.000.

Furukawa Electric Co., Ltd., The: *See—*
Fujimura, Syunichi; Oda, Eisuke; Hagiwara, Miyuki; and Morita, Youske, 4,554,173, Cl. 427-120.000.

Furukawa, Tetsuro, to Hitachi Zosen Corporation. Multiple regeneration multiple absorption type heat pump. 4,553,409, Cl. 62-476.000.

Furukawa, Yoshimi; Sano, Shoichi; Takamatsu, Hiroshi; and Sato, Makoto, to Honda Giken Kogyo Kabushiki Kaisha. Rear suspension for vehicles. 4,553,768, Cl. 280-91.000.

Furuki, Tsuneo: *See—*
Sugiyama, Hiroyuki; Shibamoto, Takeshi; Sato, Hideo; Furuki, Tsuneo; Kubo, Mitsuo; and Tanaka, Koji, 4,554,597, Cl. 358-335.000.

Furumoto, Takayuki, to Hitachi, Ltd. System for maintenance and diagnosis of mobile telephone equipment. 4,554,410, Cl. 179-2.00E.

Furutsu, Akira, to Japan Bano'k Co., Ltd.; and Ben Clements & Sons, Inc. Tag attaching device. 4,553,688, Cl. 227-67.000.

Futamura, Shoji: *See—*
Yoda, Yasutada; Sueyasu, Seisuke; and Futamura, Shoji, 4,553,918, Cl. 425-46.000.

G. D. Searle & Co.: *See—*
Chorvat, Robert J.; and Desai, Bipinchandra N., 4,554,353, Cl. 546-208.000.
Lowrie, Harman S.; and Baran, John S., 4,554,359, Cl. 549-231.000.

G. Rau GmbH & Co.: *See—*
Tautzenberger, Peter; Schneider, Friedrich; and Stoeckel, Dieter, 4,554,027, Cl. 148-11.50R.

GAF Corporation: *See—*
Barabas, Eugene S.; and Cho, James R., 4,554,311, Cl. 524-808.000.
Barabas, Eugene S.; and Cho, James R., 4,554,312, Cl. 524-808.000.

Gaiser, Robert F.; and Myers, Lawrence R., to Allied Corporation. Combination hill holder and proportioning valve mechanism. 4,553,651, Cl. 192-13.00A.

Gaku, Morio; Kimbara, Hidenori; and Yokoi, Jun, to Mitsubishi Gas Chemical Company, Inc. Preparation of curable resin from cyanate ester compound. 4,554,346, Cl. 528-363.000.

Galais, Michel; Sardain, Christian; Fouin, Jean; Arnaudeau, Marcel; and Morin, Pierre, to Moteurs Leroy-Somer. Motor-pump set for boreholes and a method of protection relating thereto. 4,553,909, Cl. 417-369.000.

Galambos, Tibor: *See—*
Kovari, Pal; Galambos, Tibor; Bogisich, Ferenc; and Teringer, Imre, 4,553,885, Cl. 409-201.000.

Gamblin, Rodger L., to Burlington Industries, Inc. Synergistic brightener combination for amorphous nickel phosphorus electroplatings. 4,554,219, Cl. 428-667.000.

Gamma-f Corporation: *See—*
Alford, James L.; and Terry, Robert E., 4,554,552, Cl. 343-786.000.

Ganesan, Apparajan: *See—*
Burson, Kyle L.; Early, Scott H.; and Ganesan, Apparajan, 4,554,515, Cl. 330-261.000.

Ganguly, Achintya K.: *See—*
Read, Michael E.; Carmel, Yuval; Chu, Kwo R.; and Ganguly, Achintya K., 4,554,484, Cl. 315-4.000.

GAO Gesellschaft fur Automation und Organisation mbH: *See—*
Mitzel, Wilhelm; Geier, Josef; and Leuthold, Karl, 4,553,312, Cl. 29-564.300.

Garascia, David C.: *See—*
Kaltz, Milton C.; Garascia, David C.; and Kilpinen, Michael E., 4,553,307, Cl. 29-434.000.

Gardner, E. Boyd: *See—*
Suomala, John E.; Bratton, Kenneth L.; Bergsten, Sten E.; Savic, Nicolas M.; and Gardner, E. Boyd, 4,554,000, Cl. 65-129.000.

Gardner, Richard N.; and Dillon, Kenneth R., to Minnesota Mining and Manufacturing Company. Infiltrated powered metal composite article. 4,554,218, Cl. 428-567.000.

Garrett Corporation, The: *See—*
Wong, Paul P.; Lippold, John B.; and Burgess, Glenn A., 4,553,474, Cl. 98-1.500.
Gaspar, Richard A.; Bastian, Donald G.; and Denlinger, Timothy L., to Harris Graphics Corporation. Collating apparatus with adjustable gear. 4,554,044, Cl. 156-510.000.

Gasser, Markus, to SIG Schweizerische Industrie-Gesellschaft. Apparatus for deflecting articles. 4,553,658, Cl. 198-369.000.
Gassew, Garry L.; and Samaras, Byron. Multi-purpose paint stick. 4,553,279, Cl. 7-105.000.
Gastmeier, William J.; and Dohmer, Rolf, to Unitron Industries. Hearing aid wax guard. 4,553,627, Cl. 181-135.000.
Gasway Corporation: *See—*
Hecht, Richard M.; and Seaverns, Robert G., 4,553,713, Cl. 242-78.100.
Gaughan, Patrick J.: *See—*
Bafunno, Daniel V.; Detter, Gary C.; Ehrhardt, James D.; Gaughan, Patrick J.; Johnson, Dale C.; and Rowlands, Richard C., 4,554,618, Cl. 362-155.000.
Gavrilko, Igor V.: *See—*
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; Sinelschikov, Andrei K.; and Tolok, Vladimir T., 4,554,201, Cl. 428-215.000.
Gavrilov, Alexei G.: *See—*
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; Sinelschikov, Andrei K.; and Tolok, Vladimir T., 4,554,201, Cl. 428-215.000.
Gehrig, George F.: *See—*
Evans, John L.; Gehrig, George F.; and Speers, Jerry M., 4,553,429, Cl. 73-155.000.
Gehring, Fritz; and Arndt, Stephan, to Lindauer Dornier Gesellschaft mbH. Apparatus for the constrained actuation of the clamping system of filling yarn insertion devices in shuttleless weaving machines. 4,553,571, Cl. 139-446.000.
Geier, Josef: *See—*
Mitzel, Wilhelm; Geier, Josef; and Leuthold, Karl, 4,553,312, Cl. 29-564.300.
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Giuseppe, Carrara. Procedure and furnace to incinerate waste materials without producing smoke. 4,553,488, Cl. 110-346.000.
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Harsco Corporation: *See*—
Wickham, Thomas D.; and Monson, Wayne R., 4,554,624, Cl. 364-148.000.
Harvey, Richard D.; Hubbard, E. Daniel; and Meintrup, Robert A., to Grain Processing Corporation. Preparation of a cationic starch paste. 4,554,021, Cl. 106-213.000.
Hasebe, Kazunori: *See*—
Hayashi, Yasuhiro; Deguchi, Naoyasu; Yamagami, Hiroyuki; Goda, Kensuke; and Hasebe, Kazunori, 4,554,245, Cl. 430-567.000.
Hasegawa, Shumpei, to Honda Giken Kogyo Kabushiki Kaisha. Idling rpm control method for an internal combustion engine adapted to improve fuel consumption characteristic of the engine. 4,553,516, Cl. 123-339.000.
Hasegawa, Shumpei: *See*—
Kishida, Eiji; Isobe, Yoshinobu; Hara, Fumio; and Hasegawa, Shumpei, 4,553,521, Cl. 123-587.000.
Hashihama, Mitsuyuki: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,012, Cl. 71-92.000.
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,015, Cl. 71-100.000.
Hashimoto, Mitsuru; Kawabata, Toshiyasu; Nanya, Toshiki; and Murayama, Hisao, to Ricoh Company, Ltd. Electrophotographic toner containing triazolium compound as charge controlling agent. 4,554,233, Cl. 430-106.600.
Hashimoto, Shigeru: *See*—
Kato, Masatake; and Hashimoto, Shigeru, 4,553,823, Cl. 350-463.000.
Hatakeyama, Takanobu: *See*—
Inaba, Hiromi; Shima, Seiya; Ando, Takeki; Kurosawa, Toshiaki; Katayama, Yasunori; Hatakeyama, Takanobu; and Hokari, Sadao, 4,553,640, Cl. 187-29.00R.
Hatakeyama, Yoshiharu; and Minosawa, Yoshio, to Yoshida Industry Co., Ltd. Inner closure cap for bottle or tube type container. 4,553,679, Cl. 215-232.000.
Hatano, Hideki: *See*—
Kanai, Mikio; Hatano, Hideki; Tajiri, Norikiyo; Otaki, Sakashi; and Kato, Sigeru, 4,554,651, Cl. 369-13.000.
Hattori, Katsuhide; Fukatsu, Yoshiaki; and Sakai, Hiroshi, to Nippon Oil and Fats Company, Limited. Water-in-oil emulsion explosive composition. 4,554,032, Cl. 149-21.000.
Hattori, Morihisa, to Nikko Kakoozai Co., Ltd. Personal wearing article. 4,553,550, Cl. 128-505.000.
Hattori, Seiji, to Daidotokushuko Kabushikikaisha. Threadedly fixing apparatus. 4,553,301, Cl. 29-237.000.
Hattori, Tetsuya: *See*—
Yoshikawa, Hiroshi; Hattori, Tetsuya; and Sato, Hideaki, 4,553,674, Cl. 211-26.000.
Hawe, Malcolm: *See*—
Farrar, David; and Hawe, Malcolm, 4,554,298, Cl. 523-336.000.
Farrar, David; and Hawe, Malcolm, 4,554,307, Cl. 524-425.000.
Hawkes, J. Barry, Jr., to W. R. Grace & Co. Microwave curing of latex-based compositions. 4,554,347, Cl. 528-503.000.
Hawkins, Edwin F., to Arcadian Corporation. Triazone fertilizer and method of making. 4,554,005, Cl. 71-30.000.
Hawkins, Richard: *See*—
Pope, Bryan M.; and Hawkins, Richard, 4,553,549, Cl. 128-421.000.
Hawkins, Ronald G.; and Hooker, Robert M., to Aluminum Company of America. Vibration damper for overhead conductor. 4,554,402, Cl. 174-42.000.
Hayakawa, Shoichi; and Saito, Muneo, to Nippondenso Co., Ltd. Starter control apparatus for automotive vehicles. 4,553,511, Cl. 123-179.00B.
Hayashi, Masakazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Image information output apparatus. 4,554,580, Cl. 358-107.000.
Hayashi, Mikio, to Seikosha Co., Ltd. Multicolor cross-hammer printer. 4,553,864, Cl. 400-121.000.
Hayashi, Yasuhiro; Deguchi, Naoyasu; Yamagami, Hiroyuki; Goda, Kensuke; and Hasebe, Kazunori, to Fuji Photo Film Co., Ltd. Color reversal light-sensitive materials. 4,554,245, Cl. 430-567.000.
Hayssen Manufacturing Company: *See*—
James, Robert C.; and Kovacs, Lloyd, 4,553,668, Cl. 206-391.000.
Haze, Setsuo, to Kabushiki Kaisha Ishida Koki Seisakusho. Combinatorial weighing apparatus having memory for storing weighing conditions. 4,553,616, Cl. 177-1.000.
Hazeltine Corporation: *See*—
Frazita, Richard F., 4,554,551, Cl. 343-771.000.
Lopez, Alfred R., 4,554,550, Cl. 343-771.000.
Headley, James A., to Texaco Inc. Aqueous drilling fluids containing alkenyl succinic anhydrides. 4,554,080, Cl. 252-8.50A.

Heaps, John F.; and Erickson, Dennis E., to Monsanto Company. Process for low temperature curable coating composition. 4,554,319, Cl. 525-155.000.

Hearnshaw, David, to Dulmison Pty. Limited. Articulated spacer-damper. 4,554,403, Cl. 174-42.000.

Hearthstone Corporation, The: *See*—
von Conta, Peter E. W., 4,553,526, Cl. 126-58.000.

Heath, John S., to International Business Machines Corporation. Thermal print head. 4,554,559, Cl. 346-76.0PH.

Heaume, Jean, to Societe de Transformation des Matieres Plastiques. Fuel tank for a motor vehicle. 4,553,681, Cl. 220-72.000.

Hecht, Richard M.; and Seaverns, Robert G., to Gasway Corporation. Coil winding control guide. 4,553,713, Cl. 242-78.100.

Heckenbach, Terry A.: *See*—
Rudich, George, Jr.; Beeson, Charles F.; Bartley, Gary L.; and Heckenbach, Terry A., 4,554,496, Cl. 318-600.000.

Hedges, Charles V.: *See*—
Mark, Victor; and Hedges, Charles V., 4,554,309, Cl. 524-611.000.
Mark, Victor; and Hedges, Charles V., 4,554,330, Cl. 525-462.000.

Heerema Engineering Service: *See*—
Willemse, Kees; Meek, Jan; and Michelsen, Finn C., 4,553,878, Cl. 405-203.000.

Heese, Joachim: *See*—
vonBebenburg, Walter, deceased; Heese, Joachim; Engel, Jurgen; and Thiele, Kurt, 4,554,281, Cl. 514-353.000.

Heger, Werner; Kaltenthaler, Wolfgang; and Wilke, Helmut, to WABCO Fahrzeugbremsen GmbH. Unloading mechanisms for air compressors. 4,553,907, Cl. 417-297.000.

Heidorn, Richard H.: *See*—
Ruehl, William E.; Heidorn, Richard H.; and Swick, Edwin G., 4,554,609, Cl. 361-119.000.

Heinrich, Hans: *See*—
Feigt, Ingmar; Heinrich, Hans; and Kempter, Karl, 4,554,453, Cl. 250-327.200.

Heizer, Ray T., to Water Services of America, Inc. Brine concentrator. 4,553,396, Cl. 60-648.000.

Helix Technology Corporation: *See*—
Young, Niels O., 4,553,398, Cl. 62-6.000.

Helm Instrument Company: *See*—
Jones, William J., 4,554,534, Cl. 340-665.000.

Hemming, Dale R.: *See*—
Mommsen, Gordon V.; and Hemming, Dale R., 4,554,622, Cl. 363-61.000.

Hendley, Eustis: *See*—
Creasy, Charles K.; and Hendley, Eustis, 4,553,741, Cl. 256-66.000.

Henkel KGaA: *See*—
Soldanski, Heinz-Dieter; and Holdt, Bernd-Dieter, 4,554,083, Cl. 252-8.570.

Henrich, Werner. Process for winding wire upon a reel. 4,553,707, Cl. 242-25.00R.

Henry Ford Hospital: *See*—
Wu, Kent K., 4,553,273, Cl. 623-18.000.

Herbreteau, Louis; and Le Roy, Alain, to Commissariat a l'Energie Atomique. Receiver for a sounder permitting the detection and measurement of phonomena linked with the earths environment. 4,554,546, Cl. 343-5.00W.

Herkenhoff, Earl F.; and Ostrander, William J., to Chevron Research Company. Method for the interpretation of seismic records to yield valuable characteristics, such as gas-bearing potential and lithology strata. 4,554,649, Cl. 367-68.000.

Herrington, F. John: *See*—
Anderson, Thomas L.; and Herrington, F. John, 4,553,370, Cl. 53-117.000.

Hesener, Walter: *See*—
Weick, Heinz H.; Hesener, Walter; and Wattinger, Rolf, 4,553,665, Cl. 206-37.000.

Hess, Edward C.; and Trevino, Edward, to General Motors Corporation. Robotic assembly of vehicle headliners. 4,553,309, Cl. 29-450.000.

Hesse, Robert H., to Research Institute For Medicine and Chemistry Inc. Process for the preparation of 1-hydroxylated vitamin D compounds. 4,554,105, Cl. 260-397.200.

Hesston Corporation: *See*—
O'Halloran, Michael L., 4,553,380, Cl. 56-305.000.

Heusch, Rudolf; Rasshofer, Werner; Reichmann, Wolfgang; and Richartz, Adolf, to Bayer Aktiengesellschaft. Homogeneous, storage-stable polyol compositions of high ethylene glycol content and their use for the production of polyurethanes. 4,554,340, Cl. 528-77.000.

Hewlett-Packard Company: *See*—
Nygaard, Richard A., Jr.; and Palmer, Fredrick J., 4,554,632, Cl. 364-200.000.

Hickey, David S.; and Brocklehurst, John C., to Victoria University of Manchester, The. Urethral catheter. 4,553,959, Cl. 604-96.000.

Hicks, Irwin A., to Singer Company, The. Rotary meter with integral instrument housing. 4,553,433, Cl. 73-273.000.

Hidden Valley Associates: *See*—
Phillips, Edward H., 4,553,590, Cl. 166-53.000.

Hide, Ichiro, to Hoxan Corporation. Apparatus for producing polyacetylene film. 4,553,919, Cl. 425-90.000.

Higaki, Masaru: *See*—
Miki, Atsushi; Mori, Etsunori; Hoshi, Minoru; and Higaki, Masaru, 4,554,523, Cl. 336-70.000.

Higaki, Yuzo: *See*—
Yamamoto, Nobuyuki; Ryoke, Katsumi; Tsuji, Nobuo; Higaki, Yuzo; and Okamura, Toshihisa, 4,554,220, Cl. 428-694.000.

Hilbert, Samuel D.; and McConnell, Richard L., to Eastman Kodak Company. Polyester hot-melt adhesives. 4,554,206, Cl. 428-261.000.

Hilco House, Inc.: *See*—
Miller, R. Lee, 4,553,946, Cl. 446-327.000.

Hill, Larry O.: *See*—
Cousin, Michael J.; Hill, Larry O.; and Justice, Rhonda G., 4,554,181, Cl. 427-261.000.

Hill, Michael P.; and Pittet, Gilbert H., to Dow Corning Ltd. Organosilicon compounds and preparation and use thereof. 4,554,369, Cl. 556-418.000.

Hille, Hans-Dieter: *See*—
Diefenbach, Horst; Dobbelstein, Arnold; and Hille, Hans-Dieter, 4,554,212, Cl. 428-413.000.

Hillion, Gerard: *See*—
Stern, Robert; and Hillion, Gerard, 4,554,397, Cl. 585-638.000.

Hilton, Graham H.; and Curl, Barry J., to De La Rue Systems Limited. Optical detection system for features on a sheet or web. 4,553,846, Cl. 356-429.000.

Hink, Walter F., Jr., to Ohio State University Research Foundation, The. Process and medium for culturing ant venom gland cells. 4,554,251, Cl. 435-240.000.

Hino, Takao: *See*—
Wachi, Sadayuki; Ohiwa, Kenichi; Shimada, Yasuo; and Hino, Takao, 4,553,931, Cl. 432-246.000.

Hiraga, Ryozo: *See*—
Kuroki, Yoichi; Yoshinari, Yukihiro; and Hiraga, Ryozo, 4,553,845, Cl. 356-400.000.

Hirano, Kenichi: *See*—
Kosaka, Akira; Murao, Sawao; Hirano, Kenichi; Tanaka, Noriaki; and Matsunaga, Kuniyoshi, 4,554,249, Cl. 435-10.000.

Hirano, Yoshinori; Kondo, Masahiko; and Kubozuka, Takao, to Nissan Motor Co., Ltd. Cylinder head of internal combustion engine. 4,553,505, Cl. 123-41.200.

Hirao, Kazuhiro: *See*—
Asano, Hiroshi; Shimamune, Takayuki; Hirao, Kazuhiro; and Hirayama, Ryuta, 4,554,176, Cl. 427-125.000.

Hiraoka, Tutomu: *See*—
Yamamoto, Mitsuo; Kinumoto, Namio; Tsuji, Toshinori; and Hiraoka, Tutomu, 4,554,178, Cl. 427-140.000.

Hirashima, Yasuhito: *See*—
Ikeda, Yoshito; Fujiwara, Hitoshi; Gomi, Yoshifumi; Matsuzawa, Masanao; and Hirashima, Yasuhito, 4,553,865, Cl. 400-124.000.

Hirata, Shinichi; and Isayama, Takuro, to Ricoh Company, Ltd. Color plotter. 4,554,556, Cl. 346-49.000.

Hirayama, Ryuta: *See*—
Asano, Hiroshi; Shimamune, Takayuki; Hirao, Kazuhiro; and Hirayama, Ryuta, 4,554,176, Cl. 427-125.000.

Hirayama, Takeshi: *See*—
Oho, Shigeru; Hamano, Fumio; and Hirayama, Takeshi, 4,554,461, Cl. 307-40.000.

Hirooka, Masaaki, to Canon Kabushiki Kaisha. Process for producing silicon-containing deposit film. 4,554,180, Cl. 427-248.100.

Hirose, Minoru, to Kabushiki Kaisha Toshiba. Automatic bank note transaction apparatus. 4,554,444, Cl. 235-379.000.

Hishiki, Hideo: *See*—
Kobayashi, Toshio; and Hishiki, Hideo, 4,554,488, Cl. 315-368.000.

Hitach, Ltd.: *See*—
Kataoka, Fumio; Shoji, Fusaji; Yokono, Hitoshi; Makino, Daisuke; Koibuchi, Shigeru; and Isobe, Asao, 4,554,237, Cl. 430-197.000.

Hitachi Chemical Company: *See*—
Ohta, Tomohisa; Dobashi, Akihiko; Kanbara, Hisashige; and Seki, Yasuyuki, 4,554,174, Cl. 427-44.000.

Hitachi Chemical Company, Ltd.: *See*—
Kataoka, Fumio; Shoji, Fusaji; Yokono, Hitoshi; Makino, Daisuke; Koibuchi, Shigeru; and Isobe, Asao, 4,554,237, Cl. 430-197.000.

Hitachi, Ltd.: *See*—
Furumoto, Takayuki, 4,554,410, Cl. 179-2.00E.
Inaba, Hiromi; Shima, Seiya; Ando, Takeki; Kurosawa, Toshiaki; Katayama, Yasunori; Hatakeyama, Takanobu; and Hokari, Sadao, 4,553,640, Cl. 187-29.00R.
Maeda, Takeshi; Tsunoda, Yoshito; Huno, Takakazu; Takasago, Masahiro; and Mizoguchi, Yasumitsu, 4,554,652, Cl. 369-44.000.
Miki, Atsushi; Mori, Etsunori; Hoshi, Minoru; and Higaki, Masaru, 4,554,523, Cl. 336-70.000.
Nakagawa, Yasuo; Oshida, Yoshitada; and Ishige, Kanji, 4,553,844, Cl. 356-376.000.
Nogami, Taro; and Tsukada, Masamichi, 4,553,840, Cl. 356-333.000.
Oho, Shigeru; Hamano, Fumio; and Hirayama, Takeshi, 4,554,461, Cl. 307-40.000.
Shibata, Akira; Kojima, Noboru; and Kuroyanagi, Tomomitsu, 4,554,596, Cl. 358-330.000.
Shimomoto, Yasuharu; Tanaka, Yasuo; Takasaki, Yukio; Ishioka, Sachio; Tsukada, Toshihisa; and Baji, Toru, 4,554,478, Cl. 313-366.000.
Todokoro, Hideo; and Fukuhara, Satoru, 4,554,455, Cl. 250-305.000.
Yamamoto, Hideharu; and Tsuneno, Hiroshi, 4,554,573, Cl. 357-73.000.
Yokoyama, Eiji; Kaneko, Tadao; Amano, Yoshiaki; and Sugimoto, Shigeo, 4,554,223, Cl. 429-20.000.
Yoshikawa, Hiroshi; Hattori, Tetsuya; and Sato, Hideaki, 4,553,674, Cl. 211-26.000.

Hitachi Maxell, Ltd.: *See*—
Karashima, Takato; and Zaitsu, Hiroshi, 4,554,606, Cl. 360-131.000.
Takagi, Hiroyoshi, 4,553,717, Cl. 242-198.000.

Hitachi Zosen Corporation: *See*—
Furukawa, Tetsuro, 4,553,409, Cl. 62-476.000.
Hnat, James G. Process for melting glass in a toroidal vortex reactor. 4,553,997, Cl. 65-27.000.
Hobby, William M.: *See*—
Valdespino, Joseph M.; Holcomb, Allen K.; and Hobby, William M., 4,553,552, Cl. 128-637.000.
Hockemeyer, Friedrich; and Preiner, Gerhard, to Wacker-Chemie GmbH. Organopolysiloxanes containing both acryloxyalkyl groups and Si-bonded hydrogen atoms in the same molecule. 4,554,339, Cl. 528-26.000.
Hoeberechts, Arthur M. E.: *See*—
van Gorkom, Gerardus G. P.; and Hoeberechts, Arthur M. E., 4,554,564, Cl. 346-161.000.
Hoechst Aktiengesellschaft: *See*—
Arpe, Hans-Jurgen; and Litterer, Heinz, 4,554,380, Cl. 564-424.000.
Mohr, Dieter, 4,554,057, Cl. 204-29.000.
Mohr, Dieter, 4,554,216, Cl. 428-469.000.
Hoelderich, Wolfgang; Mross, Wolf D.; and Schwarzmann, Matthias, to BASF Aktiengesellschaft. Process for the preparation of borosilicate zeolites. 4,554,142, Cl. 423-277.000.
Hoelzer, Helmut, to Carl Freudenberg, Firma. Shaft seal ring. 4,553,762, Cl. 277-152.000.
Hoffman, Albert, to Linde Aktiengesellschaft. Device for separating gaseous and liquid components from a foamy gas liquid mixture. 4,553,990, Cl. 55-178.000.
Hoffmann, Hanspeter. Protective helmet with securing collar. 4,553,270, Cl. 2-421.000.
Hoffmann-La Roche Inc.: *See*—
Krasso , Anna; and Ramuz, Henri, 4,554,280, Cl. 514-338.000.
Hogendobler, Richard S.: *See*—
Forney, Edgar W., Jr.; and Hogendobler, Richard S., 4,553,806, Cl. 339-94.00C.
Hokanson, Gerard C.: *See*—
Young, Cynthia A.; Schaumberg, John P.; Hokanson, Gerard C.; French, James C.; and Tunac, Josefino B., 4,554,162, Cl. 424-117.000.
Hokari, Sadao: *See*—
Inaba, Hiromi; Shima, Seiya; Ando, Takeki; Kurosawa, Toshiaki; Katayama, Yasunori; Hatakeyama, Takanobu; and Hokari, Sadao, 4,553,640, Cl. 187-29.00R.
Holberger, Kenneth D.: *See*—
Holland, Charles J.; Holberger, Kenneth D.; Epstein, David I.; Reilly, Paul; and Rosen, Josh, 4,554,627, Cl. 364-200.000.
Holbrook, Joe C.; and Shepard, Bobby L. Intermittent movement-controlling indexing shuttle device. 4,553,445, Cl. 74-130.000.
Holcomb, Allen K.: *See*—
Valdespino, Joseph M.; Holcomb, Allen K.; and Hobby, William M., 4,553,552, Cl. 128-637.000.
Holdt, Bernd-Dieter: *See*—
Soldanski, Heinz-Dieter; and Holdt, Bernd-Dieter, 4,554,083, Cl. 252-8.570.
Holland, Charles J.; Holberger, Kenneth D.; Epstein, David I.; Reilly, Paul; and Rosen, Josh, to Data General Corporation. Data processing system having a unique micro-sequencing system. 4,554,627, Cl. 364-200.000.
Holland, James F.: *See*—
Alexander, Douglas E.; Holland, James F.; Leonard, Herbert G.; and Reed, Alvin R., 4,553,869, Cl. 400-568.000.
Holland, Redus F.: *See*—
Freund, Samuel M.; Maier, William B., II; Holland, Redus F.; and Beattie, Willard H., 4,554,060, Cl. 204-157.10R.
Hollandse Signaalapparaten B.V.: *See*—
Brilman, Albert; and Koops, Geert, 4,554,548, Cl. 343-379.000.
Hollenberg, David H., to W. R. Grace & Co. Hydraulic cement admixture compositions. 4,554,020, Cl. 106-90.000.
Holmes, Ann: *See*—
Sircar, Ila; and Holmes, Ann, 4,554,282, Cl. 514-357.000.
Holmes, Paul M.: *See*—
Crissy, Charles F.; and Holmes, Paul M., 4,553,888, Cl. 410-144.000.
Holt, Neil L., to Raychem Corporation. Electrical connector. 4,553,809, Cl. 339-275.00T.
Holtmyer, Marlin D.; Harris, Phillip C.; and Hunt, Charles V., to Halliburton Company. Fracturing method for stimulation of wells utilizing carbon dioxide based fluids. 4,554,082, Cl. 252-8.55R.
Holubka, Joseph W.; and Dickie, Ray A., to Ford Motor Company. Chain-extendable crosslinkable urethane modified polyhydroxy oligomers and coating composition comprising same. 4,554,188, Cl. 427-393.500.
Homann, Ernst; Nelboeck, Michael; Schlieder, Klaus; and Bayer, Gernold, to Boehringer Mannheim GmbH. Device for the detection of bacteria, fungi, and viruses in blood. 4,553,553, Cl. 128-749.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Furukawa, Yoshimi; Sano, Shoichi; Takamatsu, Hiroshi; and Sato, Makoto, 4,553,768, Cl. 280-91.000.
Hasegawa, Shumpei, 4,553,516, Cl. 123-339.000.
Ichida, Katsumi; Fukuo, Koichi; Araki, Junichi; and Machida, Isao, 4,553,473, Cl. 92-261.000.
Kawaguchi, Takeshi, 4,553,769, Cl. 280-276.000.
Kishida, Eiji; Isobe, Yoshinobu; Hara, Fumio; and Hasegawa, Shumpei, 4,553,521, Cl. 123-587.000.
Okubo, Akira; and Miura, Seishi, 4,553,388, Cl. 60-276.000.
Yano, Yoshiki; and Kawaguchi, Yuji, 4,553,510, Cl. 123-90.340.
Honda, Yasuhiro: *See*—
Sakano, Hajime; Ito, Akitoshi; Yano, Motoichi; Honda, Yasuhiro; and Fujiwara, Takayoshi, 4,554,316, Cl. 525-71.000.
Honeywell Inc.: *See*—
Bowman, George A., 4,554,678, Cl. 455-286.000.
Durand, William W.; Jain, Anil K.; and Peterson, Ronald E., 4,553,816, Cl. 350-166.000.
Howard, James W.; and Reilly, David M., 4,554,447, Cl. 250-216.000.
Honeywell Information Systems Inc.: *See*—
Chasse, Dennis W.; and Clark, Vincent M., 4,554,445, Cl. 235-472.000.
Tarbox, Bruce H.; Rathbun, Donald J.; and Su, Taian, 4,554,598, Cl. 360-48.000.
Honl, Wolf-Dieter, to REPA Feinstanzwerk GmbH. Mechanism in roll-up device for safety belts in motor vehicles. 4,553,716, Cl. 242-107.700.
Hoobler, Mary A.: *See*—
Sikorski, James A.; and Hoobler, Mary A., 4,554,009, Cl. 071-087.000.
Hooker, Robert M.: *See*—
Hawkins, Ronald G.; and Hooker, Robert M., 4,554,402, Cl. 174-42.000.
Hooper, Ronald; and Nichols, Kenneth, to United States of America, Navy. Apparatus for demodulating gyroscope position information. 4,553,439, Cl. 74-5.400.
Hop Developments Limited: *See*—
Panzner, Frank; and Evans, Brian R., 4,554,170, Cl. 426-651.000.
Hopp, Thomas P., to New York Blood Center, Inc. Identification and preparation of epitopes on antigens and allergens on the basis of hydrophilicity. 4,554,101, Cl. 260-112.50R.
Horiba, Ltd.: *See*—
Tanimoto, Masahiro, 4,553,423, Cl. 73-1.00G.
Horix Manufacturing Co.: *See*—
Le Donne, Giovanni G., 4,553,574, Cl. 141-286.000.
Horvath, Ibolya: *See*—
Farkas, Tibor; Vigh, Laszlo ; Horvath, Ibolya; Nagy nee Vanicsek, Aniko ; Foglein, Ferenc; Meszaros, Annamaria; and Toth, Istvan, 4,554,252, Cl. 435-240.000.
Hoshi, Minoru: *See*—
Miki, Atsushi; Mori, Etsunori; Hoshi, Minoru; and Higaki, Masaru, 4,554,523, Cl. 336-70.000.
Hospital for Joint Diseases Orthopedic Institute: *See*—
Gross, Clifford M., 4,553,551, Cl. 128-567.000.
Hoster, Thomas: *See*—
Artz, Gerd; Figge, Dieter; Hoster, Thomas; and Potschke, Jurgen, 4,553,582, Cl. 164-432.000.
Houghton, Leonard E.: *See*—
Coffee, Ronald A.; Bennett, Peter C.; Houghton, Leonard E.; Johnson, Graham C.; Sommerville, John A.; Boyce, Peter H.; and Currall, William J. P., 4,553,702, Cl. 239-690.000.
House, William N., to Harman International Industries Incorporated. Multi-driver loudspeaker. 4,554,414, Cl. 179-115.5PS.
Houser, Steven A.: *See*—
Armstrong, Maclay M.; Rogers, John R.; and Houser, Steven A., 4,553,932, Cl. 433-4.000.
Armstrong, Maclay M.; and Houser, Steven A., 4,553,933, Cl. 433-5.000.
Armstrong, Maclay M.; and Houser, Steven A., 4,553,934, Cl. 433-5.000.
Houston, Theodore W.; Tasch, Al F., Jr.; Darley, Henry M.; and Fu, Horng S., to Texas Instruments Incorporated. Self-aligned gate method for making MESFET semiconductor. 4,553,316, Cl. 29-571.000.
Howard, Colin R.: *See*—
Skelly, Jacinta; Howard, Colin R.; and Zuckerman, Arie J., 4,554,157, Cl. 424-89.000.
Howard, James W.; and Reilly, David M., to Honeywell Inc. Multi-element spectral filter with curved interior surfaces. 4,554,447, Cl. 250-216.000.
Howell, Frederick H., to Ciba Geigy Corporation. Aminoalkyl aromatic compounds and their production. 4,554,379, Cl. 564-374.000.
Howeth, James R., to Rochester Gauges, Inc. Fluid level gauge having magnetic sensor. 4,554,494, Cl. 318-482.000.
Hoxan Corporation: *See*—
Hide, Ichiro, 4,553,919, Cl. 425-90.000.
HRB-Singer, Inc.: *See*—
Cornett, Frank N., 4,554,509, Cl. 329-105.000.
Hswe, Myint: *See*—
Chan, Tsiu C.; Mai, Chao; and Hswe, Myint, 4,553,314, Cl. 29-571.000.
Huang, Wann-Sheng; and Brown, Alfred, to Texaco Inc. Method for forming a gravel packed horizontal well. 4,553,595, Cl. 166-278.000.
Hubbard, E. Daniel: *See*—
Harvey, Richard D.; Hubbard, E. Daniel; and Meintrup, Robert A., 4,554,021, Cl. 106-213.000.
Hucul, Dennis A.: *See*—
Klun, Robert T.; Murchison, Craig B.; and Hucul, Dennis A., 4,554,391, Cl. 570-231.000.
Hudson, John E.; and Yohe, David B. Bowling ball carrying container. 4,553,667, Cl. 206-315.900.
Huffman, James; Brandt, Kim; and Doutre, Alton G., to Storage Technology Corporation. Self aligning, load capacity enhancing, workpiece handling device for use with a robotic system. 4,553,892, Cl. 414-121.000.
Huffman, Walter K.: *See*—
Flick, Robert H.; and Huffman, Walter K., 4,554,427, Cl. 200-250.000.

Huggins, Ronald G.; O'Brien, William D., Jr.; and Partus, Fred P., to AT&T Technologies, Inc. Methods of and apparatus for effluent disposal. 4,554,078, Cl. 210-749.000.

Humble, Raymond, to Hardy Bros (Alnwick) Ltd. Fishing reel with a variable pressure click pawl. 4,553,714, Cl. 242-84.10R.

Huno, Takakazu: *See*—
Maeda, Takeshi; Tsunoda, Yoshito; Huno, Takakazu; Takasago, Masahiro; and Mizoguchi, Yasumitsu, 4,554,652, Cl. 369-44.000.

Hunt, Charles V.: *See*—
Holtmyer, Marlin D.; Harris, Phillip C.; and Hunt, Charles V., 4,554,082, Cl. 252-8.55R.

Hunter, Byron A.; Rowland, Donald G.; and Peascoe, Warren J., to Uniroyal, Inc. Nitro urea based blowing agents. 4,554,294, Cl. 521-93.000.

Hurter, Max, to Babcock Electro-Mechanical, Inc. Armature/contact system. 4,554,521, Cl. 335-125.000.

Husman, James R.; Kellen, James N.; McCluney, Rebecca E.; and Tumey, Michael L., to Minnesota Mining and Manufacturing Co. Acrylate copolymer pressure-sensitive adhesive composition and sheet materials coated therewith. 4,554,324, Cl. 525-301.000.

Hutton, James E.: *See*—
Burger, William R.; Hutton, James E.; and Silverberg, Morton, 4,553,828, Cl. 355-3.0BE.

Huynh, Van-Ba: *See*—
Chang, Hou-min; Joyce, Thomas W.; Kirk, Thomas K.; and Huynh, Van-Ba, 4,554,075, Cl. 210-611.000.

Hwo, Charles C.; Klingensmith, George B.; and Martone, John A., to Shell Oil Company. Film compositions of butene polymers. 4,554,321, Cl. 525-240.000.

Hydrovane Compressor Company Limited: *See*—
Boller, Edward; and Williams, Michael R., 4,553,906, Cl. 417-295.000.

Hyodo, Hitoshi; Sakakibara, Naoji; and Kawata, Shoji, to Aisin Seiki Kabushiki Kaisha. Automobile speed control system. 4,553,621, Cl. 180-179.000.

Ichida, Katsumi; Fukuo, Koichi; Araki, Junichi; and Machida, Isao, to Honda Giken Kogyo Kabushiki Kaisha. Valve actuating mechanism for engines. 4,553,473, Cl. 92-261.000.

Ichikawa, Isamu; Fukushi, Yutaka; Kamata, Keiji; and Suzuki, Hikoshiro, to Topre Corporation. Air conditioning apparatus. 4,553,696, Cl. 236-49.000.

Ichikawa, Yoshiro: *See*—
Kobayashi, Hiroshi; Muramatsu, Shinichi; Ichikawa, Yoshiro; and Mitsui, Seizo, 4,553,501, Cl. 118-669.000.

Ichinomiya, Toshio; Seiki, Ryosaburo; and Imai, Tatsuo, to Seikoh Chemicals Co., Ltd. Casting coating. 4,554,214, Cl. 428-423.100.

Idaho Research Foundation, Inc., The: *See*—
Sasser, R. Garth; and Hamilton, William C., 4,554,256, Cl. 436-510.000.

Ideal Standard S.p.A.: *See*—
Biadigo, Mario; and Zucchi, Gianfranco, 4,553,920, Cl. 425-267.000.

Igarashi, Akira: *See*—
Yoneda, Junichi; and Igarashi, Akira, 4,554,566, Cl. 346-207.000.

Iida, Kazuhiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Display device including apparatus for rotating the image to be displayed. 4,554,638, Cl. 364-521.000.

Iitsuka, Yoshitsune, to Nippon I.C.S. Co., Ltd. Coin crimper. 4,553,371, Cl. 53-285.000.

Ikai, Katsushige: *See*—
Sano, Susumu; Ikai, Katsushige; Kuroda, Hiroyuki; Nakamura, Teruya; Enomoto, Hiroshi; and Ezure, Yoji, 4,554,289, Cl. 514-450.000.

Ikeda, Yoshito; Fujiwara, Hitoshi; Gomi, Yoshifumi; Matsuzawa, Masanao; and Hirashima, Yasuhito, to Epson Corporation. Ink-supplied wire dot printer. 4,553,865, Cl. 400-124.000.

Illinois Tool Works Inc.: *See*—
Griffin, James L., 4,553,842, Cl. 356-375.000.
Ruehl, William E., 4,553,802, Cl. 339-74.00R.
Ruehl, William E.; Heidorn, Richard H.; and Swick, Edwin G., 4,554,609, Cl. 361-119.000.

Imaging Associates: *See*—
Luthra, Ajay K.; Kassam, Saleem; and Mauchly, J. William, 4,553,437, Cl. 73-602.000.

Imahori, Kazutomo; Iwasaki, Tatsuo; Nakajima, Hiroshi; Kondo, Hitoshi; Tomioka, Isao; Kashima, Masaru; and Tsukamoto, Toshihiko, to Imahori, Kazutomo; Kenkyusho, Rikagaku; and Unitika Ltd. Apparatus for synthesizing adenosine-5'-triphosphate. 4,554,253, Cl. 435-288.000.

Imai, Eiichi; Takenouchi, Masanori; Uchiyama, Masaki; and Suematsu, Koshi, to Canon Kabushiki Kaisha. Toner application method and composition therefor. 4,554,234, Cl. 430-122.000.

Imai, Kiyotaka: *See*—
Yamada, Takeo; Harada, Naoki; and Imai, Kiyotaka, 4,553,854, Cl. 374-129.000.

Imai, Tatsuo: *See*—
Ichinomiya, Toshio; Seiki, Ryosaburo; and Imai, Tatsuo, 4,554,214, Cl. 428-423.100.

Imaizumi, Mamoru; and Kojima, Yasumichi, to Brother Kogyo Kabushiki Kaisha. Text processing method and apparatus. 4,553,860, Cl. 400-68.000.

Imasco-CDC Research Foundation: *See*—
McClintock, Sam A.; and Purdy, William C., 4,554,064, Cl. 204-411.000.

Imperial Chemical Industries PLC: *See*—
Carroll, William G., 4,554,306, Cl. 524-377.000.
Coffee, Ronald A.; Bennett, Peter C.; Houghton, Leonard E.; Johnson, Graham C.; Sommerville, John A.; Boyce, Peter H.; and Currall, William J. P., 4,553,702, Cl. 239-690.000.
Cross, William T.; and Ramshaw, Colin, 4,553,408, Cl. 62-476.000.

Imperial Oil Limited: *See*—
Riley, Victor, 4,553,362, Cl. 52-236.300.

Inaba, Hiromi; Shima, Seiya; Ando, Takeki; Kurosawa, Toshiaki; Katayama, Yasunori; Hatakeyama, Takanobu; and Hokari, Sadao, to Hitachi, Ltd. Controller for elevator. 4,553,640, Cl. 187-29.00R.

Inaba, Tsutomu: *See*—
Morishita, Etsuo; Sugihara, Masahiro; Inaba, Tsutomu; and Nakamura, Toshiyuki, 4,553,913, Cl. 418-55.000.

Inagaki, Hiroshi: *See*—
Kito, Tutomu; Nakasuji, Norikazu; Kataoka, Takashi; Inagaki, Hiroshi; and Shibahashi, Yutaka, 4,554,565, Cl. 346-201.000.

INAX Corporation: *See*—
Ono, Nobuhiro; and Miwa, Eiji, 4,554,204, Cl. 428-246.000.

Industrie Pirelli S.p.A.: *See*—
Tangorra, Giorgio; Cicognani, Mario; and Macchiarulo, Vincenzo, 4,553,952, Cl. 474-153.000.

Industrie Specializzate Articoli Plastici SpA: *See*—
Padovani, Pietro, 4,553,692, Cl. 229-2.5EC.

Ing. C. Olivetti & C., S.p.A.: *See*—
Chelin, Cesare; and Ceradelli, Vittorio, 4,554,590, Cl. 358-248.000.
Ciardiello, Giovanni; and Augusti, Ferdinando, 4,554,594, Cl. 358-283.000.
Crosio, Pasquale, 4,553,868, Cl. 400-356.000.
Demonte, Filippo; and Figini, Mario, 4,553,866, Cl. 400-144.200.

Ingenieurburo, Hermann Dietrich: *See*—
Dietrich, Hermann, 4,553,295, Cl. 29-1.320.

Inoue, Michiya: *See*—
Komiya, Hidetsugu; Inoue, Michiya; and Saitoh, Yoshiyuki, 4,554,462, Cl. 307-140.000.

Institut Francais du Petrole: *See*—
Dreuilhe, Jacques; and Landet, Paul-Victor, 4,553,502, Cl. 122-4.00D.
Stern, Robert; and Hillion, Gerard, 4,554,397, Cl. 585-638.000.

Institute Merieux: *See*—
Roizman, Bernard; and Lang, M. Robert, 4,554,159, Cl. 424-89.000.

Institute of Technology & Precision Electrical Discharge Work's: *See*—
Yoda, Yasutada; Sueyasu, Seisuke; and Futamura, Shoji, 4,553,918, Cl. 425-46.000.

Institute Straumann AG: *See*—
Sutter, Franz, 4,553,942, Cl. 433-225.000.

Insul Company, Inc.: *See*—
LaBate, Michael D., II; and Perri, Joseph A., 4,553,743, Cl. 266-272.000.

International Business Machines Corporation: *See*—
Afzali-Ardakani, Ali; Cohen, Mitchell S.; Pennington, Keith S.; and Sachdev, Krishna G., 4,554,562, Cl. 346-135.100.
Alexander, Douglas E.; Holland, James F.; Leonard, Herbert G.; and Reed, Alvin R., 4,553,869, Cl. 400-568.000.
Bahl, Andrew L.; Stilwell, George R., Jr; Uberbacher, Edward C.; and Williamson, Charles A., 4,553,814, Cl. 350-96.210.
Behringer, Uwe; Bohlen, Harald; Kulcke, Werner; and Nehmiz, Peter, 4,554,458, Cl. 250-492.200.
Bryant-Jeffries, Keith C.; Dickie, Hugh G.; and Vaughan, Eric V., 4,553,320, Cl. 29-598.000.
Bupp, James R.; Lemon, Gary K.; Markovich, Voya; Sambucetti, Carlos J.; Tisdale, Stephen L.; and Trevitt, Donna J., 4,554,182, Cl. 427-304.000.
Canestaro, Michael J.; Kaschak, Ronald A.; McBride, Donald G.; and Seraphim, Donald P., 4,554,184, Cl. 427-345.000.
Dillon, Gary E., 4,554,466, Cl. 307-272.00A.
Faure, Louis H.; Townsend, Dana R.; and Walsh, Thomas J., 4,554,506, Cl. 324-158.00P.
Fox, Sidney J.; Yeskel, Filip J.; and Zimmermann, William J., Jr., 4,554,593, Cl. 358-282.000.
Furman, Anatol, 4,554,645, Cl. 365-189.000.
Goldrian, Gottfried; Nitschke, Manfred; Rudolph, Volker; and Wohnsdorf, Manfred, 4,553,862, Cl. 400-121.000.
Gregory, Joseph D.; and Budnik, James M., 4,553,853, Cl. 374-25.000.
Heath, John S., 4,554,559, Cl. 346-76.0PH.
McNaughton, James L.; and Petrozello, James R., 4,553,813, Cl. 350-96.200.
Otten, Ralph H. J. M., 4,554,625, Cl. 364-148.000.
Varker, Kenneth J., 4,554,405, Cl. 174-68.500.

International Computers Limited: *See*—
Stevens, Reginald W., 4,554,673, Cl. 375-118.000.

International Flavors & Fragrances Inc.: *See*—
Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., 4,554,095, Cl. 252-522.00R.
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,554,384, Cl. 568-445.000.
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,554,385, Cl. 568-496.000.
Wiegers, Wilhelmus J.; and Sprecker, Mark A., 4,554,096, Cl. 252-522.00R.

International Shoe Machine Corporation: *See*—
Vornberger, Karl F., 4,553,281, Cl. 12-8.100.

International Standard Electric Corporation: *See*—
Minks, Werner, 4,554,520, Cl. 335-106.000.
Minks, Werner, 4,554,522, Cl. 335-202.000.

International Telephone and Telegraph Corporation: *See*—
West, Michael D., 4,553,733, Cl. 251-291.000.

Ipri, Alfred C.: *See—*
Jastrzebski, Lubomir L.; and Ipri, Alfred C., 4,554,570, Cl. 357-23.400.
Isayama, Takuro: *See—*
Hirata, Shinichi; and Isayama, Takuro, 4,554,556, Cl. 346-49.000.
Ise, Masahiro; Tanaka, Hidehiko; Machino, Katsuyuki; Matsubara, Toshiyuki; and Terasaka, Teiji, to Sharp Kabushiki Kaisha. Automatic receiver gain control in centralized monitor system. 4,554,532, Cl. 340-501.000.
Ishige, Kanji: *See—*
Nakagawa, Yasuo; Oshida, Yoshitada; and Ishige, Kanji, 4,553,844, Cl. 356-376.000.
Ishiguri, Yukio: *See—*
Sasaki, Mitsuru; and Ishiguri, Yukio, 4,554,111, Cl. 260-502.40R.
Ishii, Katsuyoshi; Kobori, Michio; and Morimoto, Seiichi, to Sanwa Shoji Co., Ltd. Determination of sulfurous acid in liquids and an apparatus therefor. 4,554,255, Cl. 436-102.000.
Ishii, Yutaka; Funada, Fumiaki; Takamatsu, Toshiaki; and Tomio, Wada, to Sharp Kabushiki Kaisha. Liquid crystal display devices. 4,553,821, Cl. 350-339.00R.
Ishikawa, Minoru: *See—*
Yamashita, Kiyotoshi; Ishikawa, Minoru; Ohta, Hideo; and Kumashiro, Kenji, 4,554,247, Cl. 430-622.000.
Ishikawa, Shozo; Sakai, Kiyoshi; Mabuchi, Minoru; Watanabe, Katsunori; and Kitahara, Makoto, to Canon Kabushiki Kaisha; and Copyer Kabushiki Kaisha. Electrophotographic photosensitive member. 4,554,231, Cl. 430-59.000.
Ishioka, Sachio: *See—*
Shimomoto, Yasuharu; Tanaka, Yasuo; Takasaki, Yukio; Ishioka, Sachio; Tsukada, Toshihisa; and Baji, Toru, 4,554,478, Cl. 313-366.000.
Isobe, Asao: *See—*
Kataoka, Fumio; Shoji, Fusaji; Yokono, Hitoshi; Makino, Daisuke; Koibuchi, Shigeru; and Isobe, Asao, 4,554,237, Cl. 430-197.000.
Isobe, Yoshinobu: *See—*
Kishida, Eiji; Isobe, Yoshinobu; Hara, Fumio; and Hasegawa, Shumpei, 4,553,521, Cl. 123-587.000.
Isono, Yoshinobu: *See—*
Fujimoto, Teruo; Isono, Yoshinobu; and Miyaki, Yoshiyuki, 4,554,376, Cl. 562-554.000.
Itami, Teruhiko: *See—*
Kimoto, Toshifumi; Todoh, Hidemasa; Itami, Teruhiko; and Saitoh, Koichi, 4,554,557, Cl. 346-74.400.
Itaya, Masahiko; Haneda, Satoshi; and Tomono, Makoto, to Konishiroku Photo Industry Co., Ltd. Apparatus and method for developing electrostatic latent image. 4,553,500, Cl. 118-657.000.
Ito, Akitoshi: *See—*
Sakano, Hajime; Ito, Akitoshi; Yano, Motoichi; Honda, Yasuhiro; and Fujiwara, Takayoshi, 4,554,316, Cl. 525-71.000.
Ito, Yoshimasa: *See—*
Shimizu, Shoji; Asakawa, Shirow; Saito, Yukihiro; and Ito, Yoshimasa, 4,553,988. Cl. 55-158.000.
Itoh, Hideki: *See—*
Itoh, Hideo; Itoh, Hideki; and Itoh, Hideya, 4,553,636, Cl. 182-231.000.
Itoh, Hideo; Itoh, Hideki; and Itoh, Hideya. Lifesaving apparatus for escaping from a building. 4,553,636, Cl. 182-231.000.
Itoh, Hideya: *See—*
Itoh, Hideo; Itoh, Hideki; and Itoh, Hideya, 4,553,636, Cl. 182-231.000.
Itoh, Isamu: *See—*
Ono, Mitsunori; and Itoh, Isamu, 4,554,243, Cl. 430-543.000.
Yamamuro, Kiyohiko; Iwasa, Yasuo; and Itoh, Isamu, 4,554,246, Cl. 430-611.000.
Iuchi, Koji: *See—*
Takebe, Yasushi; Iuchi, Koji; and Tsukamoto, Goro, 4,554,358, Cl. 549-229.000.
Iwasa, Yasuo: *See—*
Yamamuro, Kiyohiko; Iwasa, Yasuo; and Itoh, Isamu, 4,554,246, Cl. 430-611.000.
Iwasaki, Tatsuo: *See—*
Imahori, Kazutomo; Iwasaki, Tatsuo; Nakajima, Hiroshi; Kondo, Hitoshi; Tomioka, Isao; Kashima, Masaru; and Tsukamoto, Toshihiko, 4,554,253, Cl. 435-288.000.
IWK Verpackungstechnik GmbH: *See—*
Reim, Werner; and Pluschow, Dieter, 4,553,659, Cl. 198-372.000.
izushi, Tomoya: *See—*
Chiba, Iwane; Fujiwara, Junji; Kuwamoto, Hiroshi; izushi, Tomoya; Muto, Toshimi; and Toyama, Haruji, 4,554,087, Cl. 252-49.900.
J. I. Case Company: *See—*
Fachini, Robert M.; and Orsborn, Jesse H., 4,553,378, Cl. 56-16.600.
Salva, Henri E., 4,553,609, Cl. 172-647.000.
Youngers, Stephen A.; and Draney, Robert G., 4,553,448, Cl. 74-480.00R.
J. R. Simplot Company: *See—*
Bierman, Laurence W.; Edinborough, Charles R.; and Johnson, David K., 4,554,004, Cl. 71-29.000.
Jackson, Francis J. Gun trigger actuator. 4,553,347, Cl. 42-69.00R.
Jackson, Ronald M., to Tektronix, Inc. Logic timing diagram display apparatus. 4,554,536, Cl. 340-747.000.
Jackson, Theodore A., to Ex-Cell-O Corporation. Adjustable height seat apparatus for combat vehicle. 4,553,726, Cl. 248-297.100.
Jackson, Winston J., Jr.; and Watkins, Joseph J., to Eastman Kodak Company. Process for the production of high molecular weight polyester. 4,554,343, Cl. 528-274.000.
Jackson, Winston J., Jr.; and Watkins, Joseph J., to Eastman Kodak Company. Process for preparation of polyesters with improved molecular weight from glycols containing a vicinal secondary hydroxyl group. 4,554,344, Cl. 528-283.000.
Jacobs, Haroid; and Dixon, Samuel, Jr., to United States of America, Army. Three diode balanced mixer. 4,554,680, Cl. 455-326.000.
Jagenberg AG: *See—*
Sommer, Herbert; and Wohlfeil, Gerhard, 4,553,498, Cl. 118-126.000.
Jain, Anil K.: *See—*
Durand, William W.; Jain, Anil K.; and Peterson, Ronald E., 4,553,816, Cl. 350-166.000.
James Howden & Company Limited: *See—*
Wilson, Robert R.; and Falconer, Roy D., 4,553,704, Cl. 241-39.000.
James, Max F., to Tea Industries, Inc. Waterbed rail and method of making same. 4,554,039, Cl. 156-213.000.
James, Robert C.; and Kovacs, Lloyd, to Hayssen Manufacturing Company. Packing articles, such as packages of rolls of paper. 4,553,668, Cl. 206-391.000.
Janicki, Richard T., to Owens-Corning Fiberglas Corporation. Modified asphalt. 4,554,023, Cl. 106-273.00N.
Janome Sewing Machine Co. Ltd.: *See—*
Nomoto, Reishi; Takahashi, Masayoshi; and Ebata, Yoshikazu, 4,553,544, Cl. 128-340.000.
Janome Sewing Machine Industry Co. Ltd.: *See—*
Takenoya, Hideaki; and Mishima, Fumiyuki, 4,553,870, Cl. 400-662.000.
Jansen, Jacobus: *See—*
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Japan Atomic Energy Research Institute: *See—*
Fujimura, Syunichi; Oda, Eisuke; Hagiwara, Miyuki; and Morita, Youske, 4,554,173, Cl. 427-120.000.
Japan Bano'k Co., Ltd.: *See—*
Furutsu, Akira, 4,553,688, Cl. 227-67.000.
Japan Medical Supply Co., Ltd.: *See—*
Sasaki, Hideki, 4,553,964, Cl. 604-248.000.
Japan Storage Battery Company Limited: *See—*
Takagaki, Tokujiro; Sasaki, Tetsuo; and Seike, Haruo, 4,554,227, Cl. 429-178.000.
Jastrzebski, Lubomir L.; and Ipri, Alfred C., to RCA Corporation. Vertically integrated IGFET device. 4,554,570, Cl. 357-23.400.
Javelle, Edmond. Assembly for regulating the energy circulating in the meridians and method of use. 4,553,546, Cl. 128-395.000.
Jeffs, Keith D.: *See—*
Ashley, Robert J.; Bardhan, Nabendu; Hardy, Peter D.; and Jeffs, Keith D., 4,553,971, Cl. 604-415.000.
Jennings, Charles E.; Bridges, Charles D.; and King, Warren D., to Gray Tool Company. Fire-safe surface-controlled subsurface safety valve control line/wellhead connector and blowout preventer. 4,553,589, Cl. 166-53.000.
Jensen, Ronald K.: *See—*
Zinbo, Mikio; Jensen, Ronald K.; and Johnson, Milton D., 4,554,085, Cl. 252-46.600.
Jerson, Donald D.; and Chance, James F., to Westinghouse Electric Corp. Polybutadiene VPI resin. 4,554,470, Cl. 310-45.000.
Jidosha Kiki Co., Ltd.: *See—*
Suzuki, Isao; and Abe, Kenichi, 4,553,648, Cl. 188-273.000.
Jillie, Don W.; and Smith, Lawrence N., to Sperry Corporation. Superconductive integrated circuit incorporating a magnetically controlled interferometer. 4,554,567, Cl. 357-5.000.
John Bodger & Sons Co.: *See—*
Arimitsu, Yoshiro, 4,554,067, Cl. 209-136.000.
Johnson, Dale C.: *See—*
Bafunno, Daniel V.; Detter, Gary C.; Ehrhardt, James D.; Gaughan, Patrick J.; Johnson, Dale C.; and Rowlands, Richard C., 4,554,618, Cl. 362-155.000.
Johnson, David K.: *See—*
Bierman, Laurence W.; Edinborough, Charles R.; and Johnson, David K., 4,554,004, Cl. 71-29.000.
Johnson, David W., to Goodyear Tire & Rubber Company, The. Conveyor for a crop harvester. 4,553,663, Cl. 198-731.000.
Johnson, David W. Streamlining apparatus for sea/land containers. 4,553,781, Cl. 296-1.00S.
Johnson, Frances M. Hairpin opener. 4,553,557, Cl. 132-1.00R.
Johnson, Graham C.: *See—*
Coffee, Ronald A.; Bennett, Peter C.; Houghton, Leonard E.; Johnson, Graham C.; Sommerville, John A.; Boyce, Peter H.; and Currall, William J. P., 4,553,702, Cl. 239-690.000.
Johnson, Milton D.: *See—*
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Rudich, George, Jr.; Beeson, Charles F.; Bartley, Gary L.; and Heckenbach, Terry A., 4,554,496, Cl. 318-600.000.
Johnson, Vaino A. Portable tree stand. 4,553,635, Cl. 182-187.000.
Jones, C. Andrew; Leonard, John J.; and Sofranko, John A., to Atlantic Richfield Company. Methane conversion. 4,554,395, Cl. 585-500.000.
Jones, Derek A.: *See—*
Cox, Robert W.; Jones, Derek A.; Walker, David L.; and Hands, David, 4,553,930, Cl. 432-120.000.
Jones, Frank: *See—*
Jones, Robert A.; Jones, Frank; and Taylor, Graham, 4,554,091, Cl. 252-187.250.

Jones, James B., Jr.: *See*—
Spratt, Brendan J.; Pryor, David J.; Jones, James B., Jr.; Davis, Dennis W.; and Frazier, Richard V., Jr., 4,554,547, Cl. 343-7.300.
Jones, Loyd W. Combination corrosion/scale inhibitor. 4,554,090, Cl. 252-181.000.
Jones, Robert A.; Jones, Frank; and Taylor, Graham, to Lever Brothers Company. Colored bleaching compositions. 4,554,091, Cl. 252-187.250.
Jones, Warren C.: *See*—
Dery, Ronald A.; and Jones, Warren C., 4,554,033, Cl. 156-52.000.
Jones, William E., to Ball Corporation. Method for producing glass containers with reduced strain. 4,553,998, Cl. 65-69.000.
Jones, William J., to Helm Instrument Company. Control circuit for a multi-blow forming process. 4,554,534, Cl. 340-665.000.
Jordan, David D.: *See*—
Parks, Kevin B.; Jordan, David D.; and Taig, Alistair G., 4,553,949, Cl. 464-153.000.
Jordan, Roland H., to Chevron Research Company. Weir-type skimmer employing a wave diffuser. 4,554,070, Cl. 210-109.000.
Jorgensen, Bernard J., to Lockheed Corporation. Spoiler device for attachment to a leading edge slat. 4,553,721, Cl. 244-213.000.
Josephson, Lee: *See*—
Whitehead, Roy A.; Chagnon, Mark S.; Groman, Ernest V.; and Josephson, Lee, 4,554,088, Cl. 252-62.540.
Joyce, Thomas W.: *See*—
Chang, Hou-min; Joyce, Thomas W.; Kirk, Thomas K.; and Huynh, Van-Ba, 4,554,075, Cl. 210-611.000.
Jung, Johann: *See*—
Buschmann, Ernst; Zeeh, Bernd; Jung, Johann; and Sauter, Hubert, 4,554,006, Cl. 71-76.000.
Jung, Peter A.: *See*—
Rossfelder, Andre M.; and Jung, Peter A., 4,553,443, Cl. 74-22.00R.
Jung, Thomas: *See*—
Jurgens, Rainer; and Jung, Thomas, 4,553,614, Cl. 175-302.000.
Jungle Laboratories Corporation: *See*—
Gergely, Anthony J.; and Nichols, Ralph A., 4,554,261, Cl. 502-62.000.
Jurgens, Erwin F., to Union Special GmbH. Needle guide for sewing machines. 4,553,492, Cl. 112-227.000.
Jurgens, Rainer; and Jung, Thomas, to Norton Christensen, Inc. Compensation device for insertion in a drill string for deep-well drilling tools. 4,553,614, Cl. 175-302.000.
Justice, Rhonda G.: *See*—
Cousin, Michael J.; Hill, Larry O.; and Justice, Rhonda G., 4,554,181, Cl. 427-261.000.
Juszynski, Marta: *See*—
Behar, David; Rajbenbach, Arie L.; Juszynski, Marta; and Ben-Hur, Nahum, 4,554,317, Cl. 525-28.000.
Kabushiki Kaisha Daikin Seisakusho: *See*—
Ohkubo, Masahiro, 4,553,623, Cl. 180-247.000.
Shimazu, Toshiaki, 4,553,470, Cl. 91-6.000.
Kabushiki Kaisha Daini Seikosha: *See*—
Kanno, Yosuke, 4,553,850, Cl. 368-201.000.
Kabushiki Kaisha Ishida Koki Seisakusho: *See*—
Haze, Setsuo, 4,553,616, Cl. 177-1.000.
Tatematsu, Takashi, 4,553,617, Cl. 177-25.000.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Oka, Koichi; and Shintani, Fumio, 4,553,734, Cl. 251-58.000.
Kabushiki Kaisha Meidensha: *See*—
Kashiwagi, Yoshiyuki; Noda, Yasushi; and Kitakizaki, Kaoru, 4,554,425, Cl. 200-144.00B.
Kabushiki Kaisha Toshiba: *See*—
Hirose, Minoru, 4,554,444, Cl. 235-379.000.
Kanatani, Tadayuki; and Sakata, Yasuo, 4,553,929, Cl. 432-59.000.
Taguchi, Minoru; and Sasaki, Gen, 4,554,046, Cl. 156-637.000.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Kimbara, Masahiko; and Arakawa, Akio, 4,553,569, Cl. 139-1.00E.
Kaeding, Warren W.: *See*—
Forbus, Nancy P.; and Kaeding, Warren W., 4,554,394, Cl. 585-474.000.
Kafri, Oded; Karny, Ziv; and Meyerstein, Dan. Frequency marking systems. 4,553,839, Cl. 356-300.000.
Kali-Chemie Pharma GmbH: *See*—
Kehrbach, Wolfgang; Wegener, Joachim; Kuehl, Ulrich; Budden, Renke; and Buschmann, Gerd, 4,554,274, Cl. 514-239.000.
Kaltenthaler, Wolfgang: *See*—
Heger, Werner; Kaltenthaler, Wolfgang; and Wilke, Helmut, 4,553,907, Cl. 417-297.000.
Kaltz, Milton C.; Garascia, David C.; and Kilpinen, Michael E., to ASC Incorporated. Method for installing a sliding roof panel assembly. 4,553,307, Cl. 29-434.000.
Kalverkamp, Klemens. Method and apparatus for harvesting of corn or other granular fruits. 4,553,379, Cl. 56-60.000.
Kamata, Keiji: *See*—
Ichikawa, Isamu; Fukushi, Yutaka; Kamata, Keiji; and Suzuki, Hikoshiro, 4,553,696, Cl. 236-49.000.
Kamegaya, Takeo; and Watanabe, Satoshi, to Okaya Electric Industries Co., Ltd. DC Type gas discharge display panels. 4,554,482, Cl. 313-582.000.
Kamei, Ryosuke; Kobayashi, Keiitsu; Nakamura, Akira; Shimamura, Toshikazu; Tsukada, Masamitsu; and Ono, Hisashi, to Showa Denko Kabushiki Kaisha. Packaging cloth. 4,554,202, Cl. 428-225.000.
Kaminski, Walter R., to United Technologies Corporation. Sealed-off CO_2 laser. 4,554,667, Cl. 372-83.000.
Kamo, Takashi: *See*—
Sakurai, Shigenori; Kamo, Takashi; and Kimura, Shirou, 4,553,424, Cl. 73-27.00R.
Kanai, Mikio; Hatano, Hideki; Tajiri, Norikiyo; Otaki, Sakashi; and Kato, Sigeru, to Pioneer Electronic Corporation. Magneto-optical recording medium and method for preventing the erasing of the information recorded on the magneto-optical recording medium. 4,554,651, Cl. 369-13.000.
Kanaoka, Takeshi; and Shimizu, Shigehisa, to Fuji Photo Film Co., Ltd. Side printing apparatus. 4,553,833, Cl. 355-40.000.
Kanaoka, Takeshi; and Shimizu, Shigehisa, to Fuji Photo Film Co., Ltd. Side printing apparatus. 4,554,560, Cl. 346-108.000.
Kanatani, Tadayuki; and Sakata, Yasuo, to Kabushiki Kaisha Toshiba. Heating furnace. 4,553,929, Cl. 432-59.000.
Kanbara, Hisashige: *See*—
Ohta, Tomohisa; Dobashi, Akihiko; Kanbara, Hisashige; and Seki, Yasuyuki, 4,554,174, Cl. 427-44.000.
Kanebo, Ltd.: *See*—
Takebe, Yasushi; Iuchi, Koji; and Tsukamoto, Goro, 4,554,358, Cl. 549-229.000.
Kaneko, Tadao: *See*—
Yokoyama, Eiji; Kaneko, Tadao; Amano, Yoshiaki; and Sugimoto, Shigeo, 4,554,223, Cl. 429-20.000.
Kanno, Yosuke, to Kabushiki Kaisha Daini Seikosha. Logical regulation circuit for an electronic timepiece. 4,553,850, Cl. 368-201.000.
Kanoh, Osamu; and Senda, Atsuo, to Murata Manufacturing Co., Ltd. Corrosion inhibiting coating comprising layer of organic corrosion inhibitor and layer of fluoridized acrylate. 4,554,209, Cl. 428-334.000.
Kao, Yih-Sien, to RCA Corporation. Auto flesh circuitry as for a digital TV receiver. 4,554,576, Cl. 358-28.000.
Kapur, Jagdish C.; and Fasel, Herman P., to Gist-Brocades N.V. Dehalogenation process of a penicillanic acid derivative. 4,554,104, Cl. 260-245.20R.
Karahashi, Yoshimitu: *See*—
Yamauchi, Mineo; and Karahashi, Yoshimitu, 4,553,330, Cl. 33-164.00R.
Karashima, Takato; and Zaitsu, Hiroshi, to Hitachi Maxell, Ltd. Magnetic recording medium. 4,554,606, Cl. 360-131.000.
Karny, Ziv: *See*—
Kafri, Oded; Karny, Ziv; and Meyerstein, Dan, 4,553,839, Cl. 356-300.000.
Karol, Thomas J.; and Magaha, Harold S., to Texaco Inc. Borate esters of hydrocarbyl-substituted mono- and bis-succinimides containing polyamine chain linked hydroxyacyl groups and lubricating oil compositions containing same. 4,554,086, Cl. 252-49.600.
Karpowicz, John L.; and Zielsdorf, Randall A., to Baxter Travenol Laboratories, Inc. Motor control system. 4,554,492, Cl. 318-309.000.
Kasafirek, Evzen; Fric, Premysl; Slaby, Jan; and Roubalova, Alena, to Spofa, Spojene podniky pro zdravotnickou vyrobu. Alkylamides of carboxyalkanoyl peptides and method for preparation thereof. 4,554,100, Cl. 260-112.50R.
Kaschak, Ronald A.: *See*—
Canestaro, Michael J.; Kaschak, Ronald A.; McBride, Donald G.; and Seraphim, Donald P., 4,554,184, Cl. 427-345.000.
Kaschner, William C.; and Bobolts, Elroy, Jr., to Besser Company. Article transfer apparatus. 4,553,893, Cl. 414-152.000.
Kashima, Masaru: *See*—
Imahori, Kazutomo; Iwasaki, Tatsuo; Nakajima, Hiroshi; Kondo, Hitoshi; Tomioka, Isao; Kashima, Masaru; and Tsukamoto, Toshihiko, 4,554,253, Cl. 435-288.000.
Kashiwagi, Takashi, to Process Shizai Co., Ltd. Recording material containing a dyed thermally coagulatable proteinaceous compound. 4,554,239, Cl. 430-270.000.
Kashiwagi, Yoshiyuki; Noda, Yasushi; and Kitakizaki, Kaoru, to Kabushiki Kaisha Meidensha. Contact of vacuum interrupter and manufacturing process therefor. 4,554,425, Cl. 200-144.00B.
Kashiwayama, Shinei. Dermatic medicament. 4,554,161, Cl. 424-115.000.
Kaski, Erkki: *See*—
Tervamaki, Jukka; Fagerstedt, Mikael; Kukka, Aarre; and Kaski, Erkki, 4,554,134, Cl. 422-100.000.
Kasperkovitz, Wolfdietrich G., to U.S. Philips Corporation. Current stabilizing circuit arrangement. 4,554,503, Cl. 323-315.000.
Kassam, Saleem: *See*—
Luthra, Ajay K.; Kassam, Saleem; and Mauchly, J. William, 4,553,437, Cl. 73-602.000.
Kataoka, Fumio; Shoji, Fusaji; Yokono, Hitoshi; Makino, Daisuke; Koibuchi, Shigeru; and Isobe, Asao, to Hitachi, Ltd.; and Hitachi Chemical Company, Ltd. Photosensitive resin composition and method for forming fine patterns with said composition. 4,554,237, Cl. 430-197.000.
Kataoka, Takashi: *See*—
Kito, Tutomu; Nakasuji, Norikazu; Kataoka, Takashi; Inagaki, Hiroshi; and Shibahashi, Yutaka, 4,554,565, Cl. 346-201.000.
Katayama, Yasunori: *See*—
Inaba, Hiromi; Shima, Seiya; Ando, Takeki; Kurosawa, Toshiaki; Katayama, Yasunori; Hatakeyama, Takanobu; and Hokari, Sadao, 4,553,640, Cl. 187-29.00R.
Katayama, Yoshiyuki; and Nishida, Tetsuya, to Kubota, Ltd. Work-vehicle with rolling-control mechanism. 4,553,605, Cl. 172-2.000.
Kato, Hisaaki, to Murata Kikai Kabushiki Kaisha. Apron for a draft apparatus. 4,553,290, Cl. 19-244.000.
Kato, Katsunori: *See*—
Sato, Ryosuke; Kato, Katsunori; Sasaki, Takashi; and Sugita, Hiroshi, 4,554,244, Cl. 430-552.000.

Kato, Kiichi, to Olympus Optical Co. Ltd. Optical memory device with means for detecting erroneous data writing. 4,554,654, Cl. 369-54.000.
Kato, Masatake; and Hashimoto, Shigeru, to Canon Kabushiki Kaisha. Large relative aperture objective lens. 4,553,823, Cl. 350-463.000.
Kato, Sigeru: *See*—
Kanai, Mikio; Hatano, Hideki; Tajiri, Norikiyo; Otaki, Sakashi; and Kato, Sigeru, 4,554,651, Cl. 369-13.000.
Kato, Toshiro: *See*—
Funaki, Yuji; Oshita, Hirofumi; Yamamoto, Shigeo; Tanaka, Shizuya; and Kato, Toshiro, 4,554,007, Cl. 71-076.000.
Katoo, Hisashi: *See*—
Fujiwara, Kunio; Katoo, Hisashi; Satoo, Fumihide; and Taki, Hirokazu, 4,554,498, Cl. 318-640.000.
Katsuhara, Yutaka: *See*—
Tasaka, Yoshihiro; Nakamichi, Toshihiro; and Katsuhara, Yutaka, 4,554,382, Cl. 568-404.000.
Katz, Lawrence H.; Wells, Douglas M.; and Bratt, Richard G., to Data General Corporation. Digital data processing system. 4,554,626, Cl. 364-200.000.
Kaufman, Lance R. Multiple substrate circuit package. 4,554,613, Cl. 361-386.000.
Kaufmann, Anna: *See*—
Braun, Moritz; Kaufmann, Anna; and Muller, Edwin, 4,554,063, Cl. 204-254.000.
Kawabata, Takashi: *See*—
Sakai, Shinji; Kawabata, Takashi; and Harada, Yoshihito, 4,554,674, Cl. 377-17.000.
Kawabata, Toshiyasu: *See*—
Hashimoto, Mitsuru; Kawabata, Toshiyasu; Nanya, Toshiki; and Murayama, Hisao, 4,554,233, Cl. 430-106.600.
Kawaguchi, Takeshi, to Honda Giken Kogyo Kabushiki Kaisha. Front fork for a two-wheeled vehicle. 4,553,769, Cl. 280-276.000.
Kawaguchi, Yuji: *See*—
Yano, Yoshiki; and Kawaguchi, Yuji, 4,553,510, Cl. 123-90.340.
Kawai, Yoichi: *See*—
Genji, Nobuo; Takahashi, Wataru; Nakamura, Masatatsu; and Kawai, Yoichi, 4,553,413, Cl. 68-12.00R.
Kawamura, Hideaki: *See*—
Nozawa, Ryoichiro; Kawamura, Hideaki; and Sasaki, Takao, 4,554,497, Cl. 318-636.000.
Kawasaki Steel Corporation: *See*—
Yaji, Motoyasu; Shimizu, Masuto; Yamanaka, Hiromitsu; and Koshikawa, Takao, 4,553,604, Cl. 164-453.000.
Kawashima, Susumu; and Yamada, Shigeru, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument producing bass and chord tones utilizing channel assignment. 4,553,465, Cl. 84-1.030.
Kawata, Shoji: *See*—
Hyodo, Hitoshi; Sakakibara, Naoji; and Kawata, Shoji, 4,553,621, Cl. 180-179.000.
Kazlauskas, Gasparas. Cylindrical tube welding assembly. 4,554,429, Cl. 219-60.200.
Kazmierczak, Walter; and Assony, Edward M., to FMC Corporation. Speed control mechanism for a hydrostatically driven vehicle. 4,553,626, Cl. 180-307.000.
Kee, Richard C., to Polaroid Corporation. Reproducible image and information bearing record. 4,554,591, Cl. 358-256.000.
Keehan, Donald W.: *See*—
Greer, Charles B.; Keehan, Donald W.; and Springer, John A., 4,554,648, Cl. 367-49.000.
Keenan, Paul C., III: *See*—
Debes, Michael H.; and Keenan, Paul C., III, 4,553,369, Cl. 53-55.000.
Keeney, Edward M. Combat simulator. 4,553,757, Cl. 273-369.000.
Kehrbach, Wolfgang; Wegener, Joachim; Kuehl, Ulrich; Budden, Renke; and Buschmann, Gerd, to Kali-Chemie Pharma GmbH. N_bQuaternary derivatives of ajmaline and isoajmaline, methods and intermediate products in the manufacture of their derivatives and method of using same and pharmaceutical compositions thereof. 4,554,274, Cl. 514-239.000.
Keil, Joseph W., to Dow Corning Corporation. Polyorganosiloxane compositions. 4,554,296, Cl. 521-154.000.
Keim, Karl-Heinz; and Korff, Joachim, to Rheinische Braunkohlenwerke Aktiengesellschaft. Process for isomerization and transalkylation of alkylphenols. 4,554,388, Cl. 568-716.000.
Keimel, John G., to Medtronic, Inc. Cardiac pacemaker synchronized programming. 4,553,547, Cl. 128-419.0PG.
Kellen, James N.: *See*—
Husman, James R.; Kellen, James N.; McCluney, Rebecca E.; and Tumey, Michael L., 4,554,324, Cl. 525-301.000.
Keller, Ernst. Method for producing security keys having closure possibilities differing from one another. 4,553,452, Cl. 76-110.000.
Kelly, Michael A., to Surface Science Laboratories, Inc. Magnetic lens to rotate transverse particle momenta. 4,554,457, Cl. 250-396.0ML.
Kempter, Karl: *See*—
Feigt, Ingmar; Heinrich, Hans; and Kempter, Karl, 4,554,453, Cl. 250-327.200.
Kenkyusho, Rikagaku: *See*—
Imahori, Kazutomo; Iwasaki, Tatsuo; Nakajima, Hiroshi; Kondo, Hitoshi; Tomioka, Isao; Kashima, Masaru; and Tsukamoto, Toshihiko, 4,554,253, Cl. 435-288.000.
Kennametal Inc.: *See*—
Fitzgerald, Gary W.; Gulibon, Robert S.; and Penrod, Paula M., 4,553,884, Cl. 408-143.000.
Kent-Moore Corporation: *See*—
Brooks, Daryl G., 4,553,883, Cl. 408-130.000.
Kerebel, Alain, to Matra. Liquid storage reservoir with capillary confinement. 4,553,565, Cl. 137-590.000.
Kern & Co. AG.: *See*—
Meier, Dietrich; and Minder, Hans-Ulrich, 4,553,836, Cl. 356-5.000.
Kerviel, Hildebert; and Poulard, Serge, to Commissariat a l'Energie Atomique. Cold moldable explosive composition. 4,554,031, Cl. 149-19.300.
Ketchum, John L. Rebound apparatus. 4,553,751, Cl. 273-26.00A.
Ketchum, Thomas W.: *See*—
Roberts, Manuel E.; and Ketchum, Thomas W., 4,553,634, Cl. 182-134.000.
Kickhofen, Botho: *See*—
Fischer, Herbert; Kickhofen, Botho; and Vaubel, Ekkehard, 4,554,156, Cl. 424-81.000.
Kidd, Patrick D.; and Sterrett, Terry L., to Sybron Corporation. Urethane modified orthodontic adhesive. 4,554,336, Cl. 526-301.000.
Kiessling, Reiner, to Hagen Batterie AG. Negative electrode for lead accumulators. 4,554,228, Cl. 429-242.000.
Kilmartin, David F.; Kilmartin, David F., Jr.; and Cibulsky, Albinas A., to Kilmartin Industries, Inc. Magnetically selective token system. 4,553,657, Cl. 194-4.00R.
Kilmartin, David F., Jr.: *See*—
Kilmartin, David F.; Kilmartin, David F., Jr.; and Cibulsky, Albinas A., 4,553,657, Cl. 194-4.00R.
Kilmartin Industries, Inc.: *See*—
Kilmartin, David F.; Kilmartin, David F., Jr.; and Cibulsky, Albinas A., 4,553,657, Cl. 194-4.00R.
Kilmoyer, James E., to Cameron Iron Works, Inc. Valve and improved stem seal therefor. 4,553,759, Cl. 277-12.000.
Kilpinen, Michael E.: *See*—
Kaltz, Milton C.; Garascia, David C.; and Kilpinen, Michael E., 4,553,307, Cl. 29-434.000.
Kimbara, Hidenori: *See*—
Gaku, Morio; Kimbara, Hidenori; and Yokoi, Jun, 4,554,346, Cl. 528-363.000.
Kimbara, Masahiko; and Arakawa, Akio, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Control method of stopping a loom at a predetermined position thereof. 4,553,569, Cl. 139-1.00E.
Kimble, Kenneth B.; Mark, Harold W.; and Bresson, Clarence R., to Phillips Petroleum Company. Ore flotation and flotation agents for use therein. 4,554,068, Cl. 209-167.000.
Kimble, Kenneth B.; Mark, Harold W.; and Bresson, Clarence R., to Phillips Petroleum Company. Alkali carboxyalkyl dithiocarbamates and use as ore flotation reagents. 4,554,108, Cl. 260-455.00A.
Kimoto, Toshifumi; Todoh, Hidemasa; Itami, Teruhiko; and Saitoh, Koichi, to Fuji Xerox Co., Ltd. Thermomagnetic printer. 4,554,557, Cl. 346-74.400.
Kimura, Keiichi: *See*—
Shono, Toshiyuki; Kimura, Keiichi; and Maeda, Takumi, 4,554,362, Cl. 549-352.000.
Kimura, Kenji: *See*—
Tanaka, Shunpei; and Kimura, Kenji, 4,554,595, Cl. 358-328.000.
Kimura, Shirou: *See*—
Sakurai, Shigenori; Kamo, Takashi; and Kimura, Shirou, 4,553,424, Cl. 73-27.00R.
Kimura, Takahiko: *See*—
Takao, Mitsunori; Kimura, Takahiko; and Omori, Norio, 4,553,518, Cl. 123-478.000.
King, Charles S.; and Poole, Joseph J., to BL Technology Limited. Cylinder head for spark ignition internal combustion engine. 4,553,515, Cl. 123-308.000.
King, Eddie W.; Duke, Herman K.; and Summerville, Don S., to Coca-Cola Company, The. Touch selection panel for a vending machine. 4,554,419, Cl. 200-5.00A.
King, Warren D.: *See*—
Jennings, Charles E.; Bridges, Charles D.; and King, Warren D., 4,553,589, Cl. 166-53.000.
Kintz, Glenn W. Rack attachment for game tables. 4,553,750, Cl. 273-22.000.
Kinumoto, Namio: *See*—
Yamamoto, Mitsuo; Kinumoto, Namio; Tsuji, Toshinori; and Hiraoka, Tutomu, 4,554,178, Cl. 427-140.000.
Kirby, Raymond L., Jr., to Monarch Marking Systems, Inc. Ink pad. 4,553,476, Cl. 101-111.000.
Kirk, Geoffrey F. Hydraulically operated cranes. 4,553,675, Cl. 212-205.000.
Kirk, Thomas K.: *See*—
Chang, Hou-min; Joyce, Thomas W.; Kirk, Thomas K.; and Huynh, Van-Ba, 4,554,075, Cl. 210-611.000.
Kirstein, Gerhard, to Zahnraderfabrik Renk A.G. Optoelectronic position indicator for a drive system. 4,554,451, Cl. 250-237.00G.
Kishida, Eiji; Isobe, Yoshinobu; Hara, Fumio; and Hasegawa, Shumpei, to Honda Giken Kogyo Kabushiki Kaisha. Intake secondary air supply system for internal combustion engines. 4,553,521, Cl. 123-587.000.
Kishimoto, Shinzo: *See*—
Ohno, Shigeru; Kishimoto, Shinzo; and Yagihara, Morio, 4,554,242, Cl. 430-393.000.
Kitahara, Makoto: *See*—
Ishikawa, Shozo; Sakai, Kiyoshi; Mabuchi, Minoru; Watanabe, Katsunori; and Kitahara, Makoto, 4,554,231, Cl. 430-59.000.
Kitakizaki, Kaoru: *See*—
Kashiwagi, Yoshiyuki; Noda, Yasushi; and Kitakizaki, Kaoru, 4,554,425, Cl. 200-144.00B.

Kitamoto, Tatsuji: *See*—
Umemura, Shizuo; and Kitamoto, Tatsuji, 4,554,089, Cl. 252-62.560.

Kito, Tutomu; Nakasuji, Norikazu; Kataoka, Takashi; Inagaki, Hiroshi; and Shibahashi, Yutaka, to Pilot Ink Co., Ltd. Method of producing reversible thermochromic display. 4,554,565, Cl. 346-201.000.

Klamer, Reuben B.: *See*—
Robjent, Frederick B.; and Klamer, Reuben B., 4,553,767, Cl. 280-11.210.

Klein, Raymond, to Kollmorgen Technologies Corp. Photodetector automatic adaptive sensitivity system. 4,554,460, Cl. 250-578.000.

Klesel, Peter: *See*—
Pflieger, Albert; and Klesel, Peter, 4,553,585, Cl. 165-41.000.

Klingensmith, George B.: *See*—
Hwo, Charles C.; Klingensmith, George B.; and Martone, John A., 4,554,321, Cl. 525-240.000.

Klinkel, Wolfgang, to Eurobreva Engineering Trust. Packaging machine with sealing means. 4,553,377, Cl. 53-548.000.

Klisch, Stephen C.; Lai, Kuo-Yann; and Robbins, Clarence R., to Colgate-Palmolive Company. Mild liquid detergent compositions. 4,554,098, Cl. 252-547.000.

Klun, Robert T.; Murchison, Craig B.; and Hucul, Dennis A., to Dow Chemical Company, The. Preparation of 2-halo-1-alkenes from hydrocarbon streams. 4,554,391, Cl. 570-231.000.

Klunk, Thomas M.: *See*—
Cappos, David J.; and Klunk, Thomas M., 4,553,322, Cl. 29-739.000.

Knapp, Julius Z., to Schering Corporation. Method of making a stopper for a sterile fluid container. 4,554,125, Cl. 264-266.000.

Knappertz, Walter P., to Trutzschler GmbH & Co. KG. Method and apparatus for pneumatically conveying fiber material. 4,553,882, Cl. 406-181.000.

Knifton, John F., to Texaco Inc. Process for producing p-tolualdehyde from toluene using an aluminum halide alkyl pyridinium halide 'melt' catalyst. 4,554,383, Cl. 568-428.000.

Knol, Dirk: *See*—
Groeneveld, Christiaan; Knol, Dirk; Verstegen, Johannes D. M.; and Jansen, Jacobus, 4,554,386, Cl. 568-697.000.

Knoll, Helmut: *See*—
Schreier, Kurt; Bartsch, Karl; Knoll, Helmut; and Tomazic, Gerd, 4,554,041, Cl. 156-276.000.

Kobayashi, Hiroshi; Muramatsu, Shinichi; Ichikawa, Yoshiro; and Mitsui, Seizo, to Shinko Electric Industries Co., Ltd. Selective plating apparatus. 4,553,501, Cl. 118-669.000.

Kobayashi, Keiitsu: *See*—
Kamei, Ryosuke; Kobayashi, Keiitsu; Nakamura, Akira; Shimamura, Toshikazu; Tsukada, Masamitsu; and Ono, Hisashi, 4,554,202, Cl. 428-225.000.

Kobayashi, Seishichi: *See*—
Tsurumaru, Michiko; Nakazato, Seiichi; Nunokawa, Atsushi; Ueno, Hiroshi; and Kobayashi, Seishichi, 4,553,682, Cl. 220-75.000.

Kobayashi, Toshio; and Hishiki, Hideo, to Victor Company of Japan, Limited. Device for correcting an image on a picture tube having in-line electron guns and a coil assembly for the device. 4,554,488, Cl. 315-368.000.

Koblitz, Francis F.; and Smith, Roy L., to Dentsply Research & Development Corp. Visible light curable dental compositions. 4,553,940, Cl. 523-115.000.

Kobori, Michio: *See*—
Ishii, Katsuyoshi; Kobori, Michio; and Morimoto, Seiichi, 4,554,255, Cl. 436-102.000.

Kochs Adler AG: *See*—
Landwehr, Gunter, 4,553,489, Cl. 112-121.120.

Koeller, David L., to Deere & Company. Water shield ring for plasma arc cutting torch. 4,554,431, Cl. 219-121.0PP.

Koh, Hiroshi: *See*—
Tsutsumi, Suteo; and Koh, Hiroshi, 4,554,459, Cl. 250-550.000.

Koibuchi, Shigeru: *See*—
Kataoka, Fumio; Shoji, Fusaji; Yokono, Hitoshi; Makino, Daisuke; Koibuchi, Shigeru; and Isobe, Asao, 4,554,237, Cl. 430-197.000.

Koike, Hideharu, to Tokyo Shibaura Denki Kabushiki Kaisha. 4-Phase clock generator. 4,554,465, Cl. 307-269.000.

Kojima, Junpei: *See*—
Shiga, Akinobu; Sasaki, Toshio; Kojima, Junpei; and Nunose, Akira, 4,554,264, Cl. 502-112.000.

Kojima, Noboru: *See*—
Shibata, Akira; Kojima, Noboru; and Kuroyanagi, Tomomitsu, 4,554,596, Cl. 358-330.000.

Kojima, Yasumichi: *See*—
Imaizumi, Mamoru; and Kojima, Yasumichi, 4,553,860, Cl. 400-68.000.

Kojiro, Tetsuya; and Takeda, Jun, to Mitsubishi Denki Kabushiki Kaisha. Penetration assembly for bringing an optical fiber cable through a vessel wall. 4,553,812, Cl. 350-96.200.

Kollmeyer, Willy D.: *See*—
Payne, George B.; Soloway, Samuel B.; Powell, James E.; Roman, Steven A.; and Kollmeyer, Willy D., 4,554,366, Cl. 549-463.000.

Kollmorgen Technologies Corp.: *See*—
Klein, Raymond, 4,554,460, Cl. 250-578.000.

Komis, Glenna. External male urinary catheter with garment. 4,553,968, Cl. 604-349.000.

Komiya, Hidetsugu; Inoue, Michiya; and Saitoh, Yoshiyuki, to Fanuc Limited. Non-polarized contactless relay. 4,554,462, Cl. 307-140.000.

Konan Camera Research Institute, Inc.: *See*—
Abe, Kuniomi, 4,553,824, Cl. 351-219.000.

Kondo, Hitoshi: *See*—
Imahori, Kazutomo; Iwasaki, Tatsuo; Nakajima, Hiroshi; Kondo, Hitoshi; Tomioka, Isao; Kashima, Masaru; and Tsukamoto, Toshihiko, 4,554,253, Cl. 435-288.000.

Kondo, Masahiko: *See*—
Hirano, Yoshinori; Kondo, Masahiko; and Kubozuka, Takao, 4,553,505, Cl. 123-41.200.

Kone Oy: *See*—
Pelto-Huikko, Raimo K.; Ahlman, Esko A. O.; and Rautimo, Pertti V., 4,553,610, Cl. 173-1.000.

Konishi, Keizo; Yonehama, Teruo; and Yamamoto, Takao, to Tokai Rubber Industries Ltd. Damper device for engine mountings or the like. 4,553,744, Cl. 267-140.100.

Konishiroku Photo Industry Co., Ltd.: *See*—
Itaya, Masahiko; Haneda, Satoshi; and Tomono, Makoto, 4,553,500, Cl. 118-657.000.
Sato, Ryosuke; Kato, Katsunori; Sasaki, Takashi; and Sugita, Hiroshi, 4,554,244, Cl. 430-552.000.
Shibue, Toshiaki; and Nagayasu, Koichi, 4,554,175, Cl. 427-44.000.
Yamashita, Kiyotoshi; Ishikawa, Minoru; Ohta, Hideo; and Kumashiro, Kenji, 4,554,247, Cl. 430-622.000.

Konnai, Makoto: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,012, Cl. 71-92.000.
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,015, Cl. 71-100.000.

Konneker, Reinhard: *See*—
Mezger, Hans; and Konneker, Reinhard, 4,553,509, Cl. 123-90.270.

Konuki, Tadashi: *See*—
Ayata, Naoki; and Konuki, Tadashi, 4,553,834, Cl. 355-53.000.

Koops, Geert: *See*—
Brilman, Albert; and Koops, Geert, 4,554,548, Cl. 343-379.000.

Kopola, Harri: *See*—
Ahola, Raimo; Kopola, Harri; and Myllyla , Risto, 4,553,943, Cl. 434-22.000.

Korbel, Gerald E.; Robins, Janis; and Rude, Harold E., to Minnesota Mining and Manufacturing Co. Coated abrasive containing epoxy binder and method of producing the same. 4,553,982, Cl. 51-298.000.

Korcz, William H.: *See*—
Hansen, David R.; and Korcz, William H., 4,554,304, Cl. 524-291.000.

Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., to Ford Motor Company. Thermosetting coating composition useful as chip resistant primer II. 4,554,332, Cl. 525-532.000.

Korff, Joachim: *See*—
Keim, Karl-Heinz; and Korff, Joachim, 4,554,388, Cl. 568-716.000.

Korn, Heinrich, to Roder GmbH, Sitzmobelwerke. Apparatus for activating a bowden cable. 4,553,449, Cl. 74-501.00R.

Korotky, Steven K.: *See*—
Alferness, Rodney C.; Korotky, Steven K.; and Marcatili, Enrique A. J., 4,553,810, Cl. 350-96.140.

Korpman, Ralf, to Personal Products Company. Ethylene-containing polymer foam/adhesive system. 4,554,191, Cl. 428-35.000.

Korteweg, Wayne, to Americal Corporation. Device for draining body fluids and irrigating solutions. 4,553,966, Cl. 604-317.000.

Kosaka, Akira; Murao, Sawao; Hirano, Kenichi; Tanaka, Noriaki; and Matsunaga, Kuniyoshi, to Amano Pharmaceutical Company Limited. Method for the quantitative determination of physiological components in biological fluids. 4,554,249, Cl. 435-10.000.

Koshikawa, Takao: *See*—
Yaji, Motoyasu; Shimizu, Masuto; Yamanaka, Hiromitsu; and Koshikawa, Takao, 4,553,604, Cl. 164-453.000.

Koutz, Stanley L.: *See*—
Peinado, Charles O.; and Koutz, Stanley L., 4,554,129, Cl. 376-298.000.

Kovacs, Lloyd: *See*—
James, Robert C.; and Kovacs, Lloyd, 4,553,668, Cl. 206-391.000.

Kovari, Pal; Galambos, Tibor; Bogisich, Ferenc; and Teringer, Imre, to Magyar Vagon-es Gepgyar. Apparatus for the initial and improvement machining of active surface of steer cams, particularly of brake spanners. 4,553,885, Cl. 409-201.000.

Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; Foroulis, Z. Andrew; and Baldwin, Francis P., to Exxon Research & Engineering Co. Process for the manufacture of halogenated polymers. 4,554,326, Cl. 525-354.000.

Koyama, Tsuneyuki, to Victor Company of Japan, Ltd. Video signal recording and/or reproducing apparatus having a function to temporarily stop recording. 4,554,604, Cl. 360-95.000.

Kozuka, Michihiro: *See*—
Weiland, Herbert; Nuttall, Michael; and Kozuka, Michihiro, 4,553,947, Cl. 446-443.000.

Kramers, Aloysius A. J., to Akzona Incorporated. Method of forming latent-contractable elastomeric composite yarns. 4,554,121, Cl. 264-103.000.

Krasso , Anna; and Ramuz, Henri, to Hoffmann-La Roche Inc. Pyridyl methyl thio or sulfinyl indeno(5,6-d)imidazoles. 4,554,280, Cl. 514-338.000.

Kreamer, William C.: *See*—
Viitanen, Veikko K.; and Kreamer, William C., 4,553,373, Cl. 53-441.000.

Krinski, Thomas L.; and Steinmetz, Alan L., to Ralston Purina Company. Modified protein adhesive binder and process for producing. 4,554,337, Cl. 527-201.000.

Krumm, Helmut: *See—*
Roentgen, Paul; Krumm, Helmut; Lenzen, Gunter; and Schilde, Heinz, 4,554,199, Cl. 428-194.000.
Krupp-Koppers GmbH: *See—*
Rizzon, John; Adomat, Gunter; and Diemer, Peter, 4,554,053, Cl. 201-21.000.
Krystal, Gerald. Protein assay by silver binding. 4,554,254, Cl. 436-86.000.
Krywiczanin, Wladyslaw H.; and Lumsden, William, to British-American Tobacco Company Limited. Feeding web material. 4,553,712, Cl. 242-58.000.
Kubo, Mitsuo: *See—*
Sugiyama, Hiroyuki; Shibamoto, Takeshi; Sato, Hideo; Furuki, Tsuneo; Kubo, Mitsuo; and Tanaka, Koji, 4,554,597, Cl. 358-335.000.
Kubota, Ltd.: *See—*
Katayama, Yoshiyuki; and Nishida, Tetsuya, 4,553,605, Cl. 172-2.000.
Matsubara, Yoshitaka, 4,553,446, Cl. 74-471.00R.
Yoshii, Takashi, 4,553,624, Cl. 180-255.000.
Kubozuka, Takao: *See—*
Hirano, Yoshinori; Kondo, Masahiko; and Kubozuka, Takao, 4,553,505, Cl. 123-41.200.
Kudo, Yoshihiko, to Kureha Chemical Industry Co., Ltd. Off-gas desulfurization process. 4,554,140, Cl. 423-243.000.
Kuehl, Ulrich: *See—*
Kehrbach, Wolfgang; Wegener, Joachim; Kuehl, Ulrich; Budden, Renke; and Buschmann, Gerd, 4,554,274, Cl. 514-239.000.
Kuhlmann, Erven J.: *See—*
Crone, John M., Jr.; Kuhlmann, Erven J.; and McMahon, Matthew A., 4,553,499, Cl. 118-428.000.
Kukka, Aarre: *See—*
Tervamaki, Jukka; Fagerstedt, Mikael; Kukka, Aarre; and Kaski, Erkki, 4,554,134, Cl. 422-100.000.
Kulcke, Werner: *See—*
Behringer, Uwe; Bohlen, Harald; Kulcke, Werner; and Nehmiz, Peter, 4,554,458, Cl. 250-492.200.
Kumakura, Toshio: *See—*
Tabaru, Kazunori; Aoyama, Takafumi; and Kumakura, Toshio, 4,554,232, Cl. 430-106.600.
Kumar, Mahesh: *See—*
Whartenby, James C.; and Kumar, Mahesh, 4,554,514, Cl. 330-149.000.
Kumasaka, Osamu; and Touma, Teruo, to Pioneer Video Corporation. Optical data recording disc and system. 4,554,655, Cl. 369-275.000.
Kumashiro, Kenji: *See—*
Yamashita, Kiyotoshi; Ishikawa, Minoru; Ohta, Hideo; and Kumashiro, Kenji, 4,554,247, Cl. 430-622.000.
Kumatani, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Low inertia induction motor. 4,554,472, Cl. 310-62.000.
Kuntze, Rudolf, to Siemens Aktiengesellschaft. Method for reducing the redundancy of binary character sequences for matrix printing. 4,554,637, Cl. 364-518.000.
Kuo, Chang-Kiang, to Texas Instruments Incorporated. Electrically erasable programmable MNOS read only memory. 4,554,643, Cl. 365-104.000.
Kuraoka, Hiroaki; Mizuno, Toshinori; Matsui, Katsumasa; and Ohba, Masahiro, to Nippondenso Co., Ltd. Rotational reference position detection apparatus. 4,553,427, Cl. 73-117.300.
Kurata, Masami: *See—*
Saitoh, Hiroyuki; and Kurata, Masami, 4,554,583, Cl. 358-163.000.
Kureha Chemical Industry Co., Ltd.: *See—*
Kudo, Yoshihiko, 4,554,140, Cl. 423-243.000.
Kureha Kagaku Kogyo K.K.: *See—*
Okada, Shingo; Sawa, Yuji; and Adachi, Kuniomi, 4,553,376, Cl. 53-511.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Sakagami, Teruo; Arakawa, Noriyuki; Teramoto, Yoshikichi; and Nakamura, Kenichi, 4,554,335, Cl. 526-249.000.
Kurita Machinery Manufacturing Company Limited: *See—*
Hamazaki, Haruo; and Mitsugi, Makinoda, 4,553,558, Cl. 134-181.000.
Kuroda, Hiroyuki: *See—*
Sano, Susumu; Ikai, Katsushige; Kuroda, Hiroyuki; Nakamura, Teruya; Enomoto, Hiroshi; and Ezure, Yoji, 4,554,289, Cl. 514-450.000.
Kuroki, Yoichi; Yoshinari, Yukihiro; and Hiraga, Ryozo, to Canon Kabushiki Kaisha. Device for and method of aligning two bodies. 4,553,845, Cl. 356-400.000.
Kurosawa, Toshiaki: *See—*
Inaba, Hiromi; Shima, Seiya; Ando, Takeki; Kurosawa, Toshiaki; Katayama, Yasunori; Hatakeyama, Takanobu; and Hokari, Sadao, 4,553,640, Cl. 187-29.00R.
Kuroyanagi, Tomomitsu: *See—*
Shibata, Akira; Kojima, Noboru; and Kuroyanagi, Tomomitsu, 4,554,596, Cl. 358-330.000.
Kurtis, Soma: *See—*
Wilensky, Joseph, 4,553,397, Cl. 60-649.000.
Kushner, Arnold: *See—*
Conn, Shepard; and Kushner, Arnold, 4,553,965, Cl. 604-286.000.
Kusmenskji, Karl-Heinz; and Beck, Harald, to Mettler-Waagen GmbH. Weighing cell. 4,553,618, Cl. 177-185.000.
Kuwamoto, Hiroshi: *See—*
Chiba, Iwane; Fujiwara, Junji; Kuwamoto, Hiroshi; izushi, Tomoya; Muto, Toshimi; and Toyama, Haruji, 4,554,087, Cl. 252-49.900.
Kwiecinski, James R., to Westinghouse Electric Corp. Room temperature curable polybutadiene resins with copper ethylacetoacetate catalyst. 4,554,322, Cl. 525-245.000.
Kyocera Corporation: *See—*
Mizukami, Akihiko; and Shimaya, Tetsushi, 4,553,530, Cl. 126-422.000.
Ueno, Masato, 4,553,935, Cl. 433-32.000.
Kysor Industrial Corporation: *See—*
Branz, Michael A., 4,553,400, Cl. 62-127.000.
L. Schuler GmbH: *See—*
Belamaric, Zelimir, 4,554,430, Cl. 219-108.000.
La Metalli Industriale S.p.A.: *See—*
Ceresara, Sergio; and Brogi, Mario, 4,554,407, Cl. 174-128.00S.
LaBate, Michael D., II; and Perri, Joseph A., to Insul Company, Inc. Elevated device for placing slag retention means in tapping converters. 4,553,743, Cl. 266-272.000.
Labsystems Oy: *See—*
Tervamaki, Jukka; Fagerstedt, Mikael; Kukka, Aarre; and Kaski, Erkki, 4,554,134, Cl. 422-100.000.
Lada-Mocarski, Laura K.: *See—*
Griggs, James S.; and Lada-Mocarski, Laura K., 4,553,680, Cl. 220-4.00F.
Lagana, Giuseppe. Motor vehicle with its body in the form of a volumetric shell of resilient material. 4,553,783, Cl. 296-31.00P.
Lagoni, William A.: *See—*
Shanley, Robert L., II; Yost, Thomas D.; and Lagoni, William A., 4,554,577, Cl. 358-34.000.
Lai, Kuo-Yann: *See—*
Klisch, Stephen C.; Lai, Kuo-Yann; and Robbins, Clarence R., 4,554,098, Cl. 252-547.000.
Lam, Kin C.; and Williams, Ronald K., to Beckman Instruments, Inc. Multi-angle adapter for fixed angle centrifuge rotor. 4,553,955, Cl. 494-16.000.
LaMattina, John L., to Pfizer Inc. 2-Amino-5-hydroxy-4-methylpyrimidine derivatives. 4,554,276, Cl. 514-272.000.
Lambert, Harry; and Lambert, Margaret C. Tape cassettes. 4,554,443, Cl. 235-103.000.
Lambert, Jean C.; Barre, Guy; Dejaifve, Pierre; and Bidan, Gerard, to Shell Oil Company. Process for the production of hydrocarbons. 4,554,292, Cl. 518-728.000.
Lambert, Margaret C.: *See—*
Lambert, Harry; and Lambert, Margaret C., 4,554,443, Cl. 235-103.000.
Lamont, John S. Internal combustion engine. 4,553,385, Cl. 60-39.600.
Lamothe, Boulan, Dunogues, Duffaut, and Ribault: *See—*
Le Ribault, Loic P.; Donogues, Jacques P.; and Duffaut, Norbert C., 4,553,597, Cl. 166-305.00R.
Lamphere, Carla A.; and Spector, George. Electrically heated ice cream scoop. 4,553,921, Cl. 425-279.000.
Lancaster, Charles D.: *See—*
Laskey, Daniel A., 4,553,454, Cl. 81-125.000.
Lancaster, Patrick R., III: *See—*
Lancaster, William G.; and Lancaster, Patrick R., III, 4,553,374, Cl. 53-465.000.
Lancaster, William G.; and Lancaster, Patrick R., III. Rotatable film wrapping apparatus for cylindrical loads. 4,553,374, Cl. 53-465.000.
Landet, Paul-Victor: *See—*
Dreuilhe, Jacques; and Landet, Paul-Victor, 4,553,502, Cl. 122-4.00D.
Landwehr, Gunter, to Kochs Adler AG. Sewing device with a sewing head including a rotary housing. 4,553,489, Cl. 112-121.120.
Lane, Thomas; and Rosen, Murray, to Marine Shield Corporation. Anti-fouling coating composition, process for applying same and coating thereby obtained. 4,554,185, Cl. 427-385.500.
Lang, Gunter, to Maschinenfabrik Alfred Schmermund GmbH & Co. Packaging quality control method and apparatus. 4,553,847, Cl. 356-445.000.
Lang, M. Robert: *See—*
Roizman, Bernard; and Lang, M. Robert, 4,554,159, Cl. 424-89.000.
Lang, Thomas J.: *See—*
Distin, Robert G., Jr.; and Lang, Thomas J., 4,553,451, Cl. 74-805.000.
Langley, Dennis C.; and Brekka, Thomas T., to Micro Component Technology, Inc. Apparatus for determining the alignment of leads on a body. 4,553,843, Cl. 356-375.000.
Langner, Carl G., to Shell Oil Company. Pipelaying in artic offshore waters. 4,553,879, Cl. 405-270.000.
Lanuzzi, Max: *See—*
Votteler, Arno; Lanuzzi, Max; Dubach, Fredi; and Schreiner, Herbert, 4,553,483, Cl. 108-4.000.
Lapidot, Heine: *See—*
Ward, William J., III; Ritzer, Alan; and Lapidot, Heine, 4,554,370, Cl. 556-472.000.
Lapraik, Scott J.; and Becker, Wayne A., to GTE Products Corporation. Electrical connector. 4,553,803, Cl. 339-74.00R.
Lapraik, Scott J.; and Becker, Wayne A., to GTE Products Corporation. Electrical connector. 4,553,804, Cl. 339-74.00R.
Lardner, Graham G., to Unipart Group Limited. Motor vehicle oil cooler. 4,553,586, Cl. 165-76.000.
Larsen, Poul K.: *See—*
Haisma, Jan; Larsen, Poul K.; De Jong, Tim; Van der Veen, Johannes F.; Douma, Willem A. S.; and Saris, Frans W., 4,554,030, Cl. 148-175.000.
Larsen, Walter L. Clip-type hook fastening device. 4,553,294, Cl. 24-489.000.

Laskey, Daniel A., to Lancaster, Charles D.; and Laskey, Richard F. Nut retaining socket with replaceable nut retainer. 4,553,454, Cl. 81-125.000.

Laskey, Richard F.: *See*—
Laskey, Daniel A., 4,553,454, Cl. 81-125.000.

Lassota, Marek J. Cylinder-piston of a rotary compressor. 4,553,912, Cl. 418-54.000.

Lastro Ky: *See*—
Artama, Arvi; and Nurmi, Uuno, 4,553,987, Cl. 55-118.000.

Lau, Yue-Ying: *See*—
Baird, J. Mark; Barnett, Larry R.; and Lau, Yue-Ying, 4,554,483, Cl. 315-4.000.

Laurello, Vincent P., to United Technologies Corporation. Stator structure for a gas turbine engine. 4,553,901, Cl. 415-138.000.

Laurent, Sebastian M.: *See*—
Scull, Herbert M.; and Laurent, Sebastian M., 4,554,141, Cl. 423-245.000.

Lazarus, Harrison; and Nelson, James A., to Lazarus, Harrison; and Nelson, James A., a part interest. Peritoneal fluid treatment apparatus, package and method. 4,553,960, Cl. 604-158.000.

Lear Siegler, Inc.: *See*—
Pierce, William C., 4,553,773, Cl. 280-676.000.

Leavy, Dale A.: *See*—
Elam, Carl M.; and Leavy, Dale A., 4,554,584, Cl. 358-165.000.

LeBeau, Gary J. Archery bow adjustable scope mount. 4,553,338, Cl. 33-265.000.

Lech, Thaddeus, Jr.; and Schmitz, Paul L., to Borg-Warner Corporation. Two-stage clutch damper assembly. 4,553,655, Cl. 192-106.200.

LeCocq, Andrew D., to Quest Medical, Inc. IV Delivery controller. 4,553,958, Cl. 604-67.000.

Lectron Products, Inc.: *See*—
Slavin, Michael; and Miller, Ellsworth S., 4,554,406, Cl. 174-94.00R.

Le Dantec, Olivier J.; and Balage, Charly G., to Framatome & Cie. Expanding plug. 4,553,889, Cl. 411-21.000.

Le Donne, Giovanni G., to Horix Manufacturing Co. Valve tip for filling apparatus. 4,553,574, Cl. 141-286.000.

Lee, Chain-Hsiang. Extension table with single leg. 4,553,485, Cl. 108-86.000.

Lee, Chi C., to Du Pont de Nemours, E. I., and Company. Stretched-and-bonded polyethylene plexifilamentary nonwoven sheet. 4,554,207, Cl. 428-288.000.

Lee, David L.: *See*—
Carter, Charles G.; and Lee, David L., 4,554,014, Cl. 71-94.000.

Lee, Grady E.: *See*—
Dawson, Raymond L.; Dodd, Clayton; Harrell, Bobby E.; and Lee, Grady E., 4,553,438, Cl. 73-830.000.

Lee, Mark C., to United States of America, National Aeronautics and Space Administration. Apparatus for production of ultrapure amorphous metals utilizing acoustic cooling. 4,553,917, Cl. 425-6.000.

Lee, Maurice W., Jr. Automatic circuit control for electrical resistance cooking apparatus. 4,554,440, Cl. 219-501.000.

Lee, Seok H.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Lee, Seok H.; and Phelps, Mary E., 4,554,106, Cl. 260-397.200.

Lee, Valerie H., to Lee, Valerie Holdeman; Lee, William Matthias; Schaffner, Arlene; and Schaffner, Donald. Hand exerciser. 4,553,746, Cl. 272-68.000.

Lee, Valerie Holdeman: *See*—
Lee, Valerie H., 4,553,746, Cl. 272-68.000.

Lee, William Matthias: *See*—
Lee, Valerie H., 4,553,746, Cl. 272-68.000.

Leewood, Alan R.: *See*—
Legg, Wesley E.; Ault, Russell L.; Mott, Richard A.; and Leewood, Alan R., 4,553,364, Cl. 52-309.130.

le Faou, Daniel: *See*—
Bernard, Jean; Beyl, Jean J. A.; Campillo, Christian; and le Faou, Daniel, 4,553,771, Cl. 280-615.000.

Lefler, Harold V., III: *See*—
Fey, Kenneth C.; and Lefler, Harold V., III, 4,554,331, Cl. 525-478.000.

Legg, Wesley E.; Ault, Russell L.; Mott, Richard A.; and Leewood, Alan R., to Owens-Corning Fiberglas Corporation. Window sash and frame molded of fibrous material. 4,553,364, Cl. 52-309.130.

Leggett & Platt, Incorporated: *See*—
Zapletal, Henry; Wentzek, Horst F.; and Chembakaffery, George M., 4,553,324, Cl. 29-822.000.
Zapletal, Henry; Wentzek, Horst F.; and Chembakaffery, George M., 4,553,572, Cl. 140-92.800.

Lei, Kenneth P. V.; Eisele, Judith A.; and McClelland, Gene E., to United States of America, Interior. Electrolytic production of precious metals. 4,554,058, Cl. 204-110.000.

Leichnitz, Kurt, to Dragerwerk A.G. Gas measuring testing tube. 4,554,133, Cl. 422-87.000.

Leighton, Stephen B. Intra-urethral prosthetic sphincter valve. 4,553,533, Cl. 128-1.00R.

Leland Stanford Junior University, The Board of Trustees of: *See*—
Shaw, Herbert J.; and Digonnet, Michel J. F., 4,554,510, Cl. 330-4.300.

Lemole, Gerald M. Electrical lead and method for temporary cardiac pacing. 4,553,554, Cl. 128-784.000.

Lemon, Gary K.: *See*—
Bupp, James R.; Lemon, Gary K.; Markovich, Voya; Sambucetti, Carlos J.; Tisdale, Stephen L.; and Trevitt, Donna J., 4,554,182, Cl. 427-304.000.

Lenane, Denis L.: *See*—
Hanlon, J. Vincent; Lenane, Denis L.; and Retzloff, James B., 4,553,979, Cl. 44-57.000.

Lendl, Joseph, to Triumph-Adler Aktiengesellschaft fur Buro-Informationstechnik. Control system for thermal printing typewriters or like machines. 4,553,861, Cl. 400-120.000.

Lense, Robert F., to Amerock Corporation. Power actuated operator for windows and the like. 4,553,656, Cl. 192-142.00R.

Lenzen, Gunter: *See*—
Roentgen, Paul; Krumm, Helmut; Lenzen, Gunter; and Schilde, Heinz, 4,554,199, Cl. 428-194.000.

Leonard, Herbert G.: *See*—
Alexander, Douglas E.; Holland, James F.; Leonard, Herbert G.; and Reed, Alvin R., 4,553,869, Cl. 400-568.000.

Leonard, John J.: *See*—
Jones, C. Andrew; Leonard, John J.; and Sofranko, John A., 4,554,395, Cl. 585-500.000.

Leone, James W.: *See*—
Bercier, John R.; Cieslowski, Thomas C.; Delaquila, Gary E.; Leone, James W.; and Mauersberger, Paul H., 4,553,345, Cl. 40-576.000.

Lephardt, John O., to Philip Morris Incorporated. Cigarette having a corrugated wrapper. 4,553,556, Cl. 131-336.000.

Le Ribault, Loic P.; Donogues, Jacques P.; and Duffaut, Norbert C., to Lamothe, Boulan, Dunogues, Duffaut, and Ribault. Process for eliminating clays from rocks and sedimentary environments. 4,553,597, Cl. 166-305.00R.

Lerner, Michael. Cleat. 4,553,495, Cl. 114-218.000.

Le Roy, Alain: *See*—
Herbreteau, Louis; and Le Roy, Alain, 4,554,546, Cl. 343-5.00W.

Le Roy, Pierre; Farge, Daniel; Moutonnier, Claude; Peyronel, Jean-Francois; and Plau, Bernard, to Rhone-Poulenc Sante. 3-(1-Halo-2-oxoethyl)cephalosporin intermediates. 4,554,350, Cl. 544-22.000.

Lest, William L., to United States of America, Agriculture. Aliquot part locator. 4,554,442, Cl. 235-88.00R.

L'Etat Francais, represente par le Ministre des P.T.A. (Centre National d'Etudes des Telecommunications CNET): *See*—
Noirel, Yves M.; Vardo, Jean-Claude; and Chevee, Gerard, 4,554,660, Cl. 370-94.000.

Leuck, Hans; and Westermann, Hans-Jorg, to Dynamit Nobel AG. Method of preparing 1,2-dichloroethane from ethylene and chlorine gas. 4,554,392, Cl. 570-254.000.

Leuthold, Karl: *See*—
Mitzel, Wilhelm; Geier, Josef; and Leuthold, Karl, 4,553,312, Cl. 29-564.300.

Levavasseur, Jacques A.: *See*—
Neel, Emmanuel E. A.; Levavasseur, Jacques A.; and Reinalda, Donald, 4,554,268, Cl. 502-439.000.

Lever Brothers Company: *See*—
Clarke, David E., 4,554,099, Cl. 252-551.000.
Jones, Robert A.; Jones, Frank; and Taylor, Graham, 4,554,091, Cl. 252-187.250.

Levine, Richard W., to Construction Technology, Inc. Method and apparatus for marking or cutting laminar patterns or forms. 4,554,635, Cl. 364-475.000.

Lewin, Ian H., to U.S. Philips Corporation. Electrostatic chuck loading. 4,554,611, Cl. 361-234.000.

Lewis, Dan, Jr., to Miles Laboratories, Inc. Collapsible molded container. 4,553,970, Cl. 604-408.000.

Lewis, Michael L.: *See*—
Fassett, Matthew; Toth, John F.; Lewis, Michael L.; and Miccioli, William F., 4,554,549, Cl. 343-700.0MS.

Liberts, Sandra; Creer, Jack G.; and Mole, Thomas, to Broken Hill Proprietary Company Limited, The; and Commonwealth Scientific and Industrial Research Organisation. Two-stage process for converting propane to aromatics. 4,554,393, Cl. 585-322.000.

Libman Broom Company: *See*—
Batchelor, Douglas R., 4,553,282, Cl. 15-150.000.

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Becker, Reinhard, deceased; Seber, Gudula, legal representative; Becker, Ulrich, legal representative; Becker, Hans C., legal representative; Becker, Gero, legal representative; Mussigmann, Artur; and Schurr, Anton, 4,553,811, Cl. 350-96.200.

Liebert, Karl-Heinz; Tischer, Werner; and Fassbender, Rolf, to Zahnradfabrik Friedrichshafen, AG. Hydrostatic steering arrangement. 4,553,390, Cl. 60-384.000.

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Tischer, Werner; Liebert, Karl-Heinz; and Fassbender, Rolf, 4,553,389, Cl. 60-384.000.

Liggett, Paul E., to Goodyear Aerospace Corporation. Controlling the rate of diamine curing agents in polyurethane cements. 4,554,299, Cl. 523-466.000.

Liggett, Paul E.; and Chung, Daniel A., to Goodyear Aerospace Corporation. Reducing the speed of aliphatic diamine curing agents in polyurethane cements. 4,554,300, Cl. 523-466.000.

Lin, Jiang-Jen, to Texaco Inc. Process for dicarbonylation of simple olefins. 4,554,374, Cl. 560-204.000.

Lin, Jiang-Jen; and Alexander, David C., to Texaco Inc. Co-preparation of 2,7-octadienyl formate, 1,6-octadiene and 4 vinylcyclohexene from butadiene using a platinum catalyst. 4,554,375, Cl. 560-244.000.

Lin, Jiang-Jen: *See*—
Sanderson, John R.; Yeakey, Ernest L.; and Lin, Jiang-Jen, 4,554,364, Cl. 549-453.000.

Lindauer Dornier Gesellschaft mbH: *See*—
Gehring, Fritz; and Arndt, Stephan, 4,553,571, Cl. 139-446.000.

Linde Aktiengesellschaft: *See—*
Eckhardt, Erich; Schmitt, Karl; Grone, Wolfgang; and Binev, Binio, 4,553,620, Cl. 180-6.480.
Hoffman, Albert, 4,553,990, Cl. 55-178.000.

Lindenmaier, Klaus; and Zieger, Josef, to Daimler-Benz Aktiengesellschaft. Device for the generation of a defined fuel vapor/air mixture. 4,553,520, Cl. 123-557.000.

Lindsay, Edward R.: *See—*
Aid, James D.; and Lindsay, Edward R., 4,554,069, Cl. 210-101.000.

Linnekin, Robert L. Circular chess. 4,553,756, Cl. 273-261.000.

Lipha Lyonnaise Industrielle Pharmaceutique: *See—*
Bayssat, Michel; Ferrand, Gerard; and Depin, Jean-Claude, 4,554,273, Cl. 514-221.000.

Lippert, Thomas E.: *See—*
Ciliberti, David F.; and Lippert, Thomas E., 4,553,986, Cl. 55-68.000.

Lippold, John B.: *See—*
Wong, Paul P.; Lippold, John B.; and Burgess, Glenn A., 4,553,474, Cl. 98-1.500.

Litterer, Heinz: *See—*
Arpe, Hans-Jurgen; and Litterer, Heinz, 4,554,380, Cl. 564-424.000.

Liu, Chen-Chia. Rocking and moving mimic horse. 4,553,766, Cl. 280-1.182.

Livigni, Russell A.: *See—*
Vitus, Francis J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,553,578, Cl. 152-209.00R.

Lockett, William, III; and Oliver, Edward D., to Lockett, William, III. Infant seating and lounge unit. 4,553,786, Cl. 297-440.000.

Lockheed Corporation: *See—*
Jorgensen, Bernard J., 4,553,721, Cl. 244-213.000.

Logan, Francis D., to Camco, Incorporated. Integrally formed side-pocket mandrel. 4,553,310, Cl. 29-517.000.

Loh, William, to Chevron Research Company. 5-Deoxy-3-O-arylmethyl or substituted arylmethyl-1,2-O-substituted-alkylidene-alpha-D-xylofuranose herbicide derivatives. 4,554,010, Cl. 71-88.000.

Loh, William, to Chevron Research Company. Herbicidal 2S-(2β,4β,5β)-5-Arylmethoxy-4-substituted 2-alkyl-1,3-dioxane derivatives. 4,554,011, Cl. 71-88.000.

Lok, Brent M.: *See—*
Messina, Celeste A.; Lok, Brent M.; and Flanigen, Edith M., 4,554,143, Cl. 423-306.000.

Long, Stuart G.; and Maciocia, Michael J., to General Dynamics Pomona Division. Laminated anti-static skin-packaging material. 4,554,210, Cl. 428-349.000.

Lonne, Klaus; and Majewski, Klaus-Peter, to Goetze AG. Sealing ring. 4,554,084, Cl. 252-12.400.

Looney, Mark D.; and Savage, Kerry D., to Texaco Inc. Method of protecting an RF applicator. 4,553,592, Cl. 166-248.000.

Lopez, Alfred R., to Hazeltine Corporation. Resonant waveguide aperture manifold. 4,554,550, Cl. 343-771.000.

Lorenzen, Steven C.; and Sterling, Vaughn C., to General Electric Company. Switching device for photoflash unit. 4,553,928, Cl. 431-359.000.

Los, Marinus, to American Cyanamid Company. Herbicidal imidazolinyl naphthoic acids. 4,554,013, Cl. 71-92.000.

Loughry, Clark E.: *See—*
Maldonado, Robert; and Loughry, Clark E., 4,554,676, Cl. 378-170.000.

Lovas, Kurt: *See—*
Bock, Erich; Lovas, Kurt; Promoli, Johann-Christian; and Dammig, Joachim, 4,553,709, Cl. 242-47.010.

Lovens Kemiske Fabrik Produktionsaktieselskab: *See—*
Godtfredsen, Wagn O., 4,554,160, Cl. 424-114.000.

Lowe, James R., to McDonnell Douglas Corporation. Conformal head-up display. 4,554,545, Cl. 340-980.000.

Lowrie, Harman S.; and Baran, John S., to G. D. Searle & Co. 3-Substituted pentanedioic acids and derivatives thereof. 4,554,359, Cl. 549-231.000.

Loza, Roman: *See—*
Greene, Janice L.; and Loza, Roman, 4,554,345, Cl. 528-336.000.

LTV Aerospace and Defense Company: *See—*
Wilson, Dayton H., 4,554,657, Cl. 370-85.000.

Lucas Industries public limited company: *See—*
Price, Anthony G.; and Parry, David, 4,553,395, Cl. 60-562.000.

Lucas, Michael R., to Westinghouse Electric Corp. Low stress leadless chip carrier and method of assembly. 4,554,575, Cl. 357-80.000.

Luebeck, Duane A.: *See—*
Snyder, Irving F.; and Luebeck, Duane A., 4,553,700, Cl. 239-215.000.

Lueth, Roy C., to Ultra-Temp Corporation. Electric heating coil. 4,554,441, Cl. 219-552.000.

Luetzelschwab, Wayne E., to Marathon Oil Company. Flow control method. 4,553,594, Cl. 166-275.000.

Lumsden, William: *See—*
Krywiczanin, Wladyslaw H.; and Lumsden, William, 4,553,712, Cl. 242-58.000.

Lupke, Manfred A. A. Producing thermoplastic articles particularly with porous walls. 4,553,923, Cl. 425-393.000.

Lurssen, Klaus: *See—*
Schroder, Rolf; and Lurssen, Klaus, 4,554,017, Cl. 71-113.000.

Luthra, Ajay K.; Kassam, Saleem; and Mauchly, J. William, to Imaging Associates. Hybrid non-invasive ultrasonic imaging system. 4,553,437, Cl. 73-602.000.

Lyford-Pike, Edward J.: *See—*
Duggal, Vinod K.; Lyford-Pike, Edward J.; and Smith, Edward D., 4,553,504, Cl. 123-25.00J.

Lyman, Roger T. Wheelchair attachment. 4,553,770, Cl. 280-289.0WC.

Lynch Machinery: *See—*
Shields, Ronald H., 4,554,001, Cl. 65-160.000.

Lynk, Charles N., Jr.: *See—*
Smith, Paul F.; Schorman, Eric; Burke, Timothy M.; and Lynk, Charles N., Jr., 4,554,677, Cl. 455-54.000.

Lyons, William C. Pressure drop regulator for downhole turbine. 4,553,611, Cl. 175-71.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Greiner, Harry M.; Fischer, Hermann; and Simeth, Claus, 4,553,478, Cl. 101-426.000.

Maass, Dierk; and Wallsten, Hans I., to Medinvent S.A. Device for application in blood vessels or other difficultly accessible locations and its use. 4,553,545, Cl. 128-341.000.

Maassen, Egbertus J. P., to U.S. Philips Corporation. Tri-color additive color printing head and enlarger. 4,553,832, Cl. 355-32.000.

Mabuchi, Minoru: *See—*
Ishikawa, Shozo; Sakai, Kiyoshi; Mabuchi, Minoru; Watanabe, Katsunori; and Kitahara, Makoto, 4,554,231, Cl. 430-59.000.

Macchiarulo, Vincenzo: *See—*
Tangorra, Giorgio; Cicognani, Mario; and Macchiarulo, Vincenzo, 4,553,952, Cl. 474-153.000.

Machida, Isao: *See—*
Ichida, Katsumi; Fukuo, Koichi; Araki, Junichi; and Machida, Isao, 4,553,473, Cl. 92-261.000.

Machino, Katsuyuki: *See—*
Ise, Masahiro; Tanaka, Hidehiko; Machino, Katsuyuki; Matsubara, Toshiyuki; and Terasaka, Teiji, 4,554,532, Cl. 340-501.000.

Maciocia, Michael J.: *See—*
Long, Stuart G.; and Maciocia, Michael J., 4,554,210, Cl. 428-349.000.

MacIver, Bernard A.; Erskine, James C., Jr.; and Bierlein, John C., to General Motors Corporation. Metal bearing surface having an adherent acore-resistant coating. 4,554,208, Cl. 428-332.000.

MacLaury, Michael R.: *See—*
Stoll, Robert W.; and MacLaury, Michael R., 4,554,147, Cl. 423-335.000.

Mader, Karl-Heinz: *See—*
Franklin, Brian; and Mader, Karl-Heinz, 4,554,259, Cl. 501-67.000.

Madsen, Kay, to Eaton Corporation. Optical inspection system. 4,553,838, Cl. 356-237.000.

Maeda, Takeshi; Tsunoda, Yoshito; Huno, Takakazu; Takasago, Masahiro; and Mizoguchi, Yasumitsu, to Hitachi, Ltd. Optical information processor. 4,554,652, Cl. 369-44.000.

Maeda, Takumi: *See—*
Shono, Toshiyuki; Kimura, Keiichi; and Maeda, Takumi, 4,554,362, Cl. 549-352.000.

Maffey, Constant O. Trailer kingpin locking device with protected locking bar aperture. 4,553,415, Cl. 70-232.000.

Magaha, Harold S.: *See—*
Karol, Thomas J.; and Magaha, Harold S., 4,554,086, Cl. 252-49.600.

Magdics, Alex: *See—*
Worthington, Ralph E.; and Magdics, Alex, 4,554,139, Cl. 423-166.000.
Worthington, Ralph E.; Magdics, Alex; and Stain, Donald B., 4,554,151, Cl. 423-551.000.

Magee, John H., Jr.: *See—*
DeBold, Terry A.; Magee, John H., Jr.; and Schmidt, Norman B., 4,554,028, Cl. 148-38.000.

Maggi, Joseph A.; and Wilensky, Barry F., to Allied Corporation. Apparatus for testing circuits within a system. 4,554,636, Cl. 364-481.000.

Magid, David J., to Enviro-Spray Systems, Inc. Dispensing system and a refill pouch. 4,553,685, Cl. 222-1.000.

Magna-Graphics Corporation: *See—*
Belongia, Larry P., 4,553,461, Cl. 83-344.000.

Magni, Riccardo. High lift truck with telescoping boom assemblies. 4,553,899, Cl. 414-629.000.

Magyar Vagon-es Gepgyar: *See—*
Kovari, Pal; Galambos, Tibor; Bogisich, Ferenc; and Teringer, Imre, 4,553,885, Cl. 409-201.000.

Mahlein, Hans, to Siemens Aktiengesellschaft. Optical polarizer having a dielectric multiple layer system. 4,553,822, Cl. 350-377.000.

Mahr, Peter. Laminated sailcloth. 4,554,205, Cl. 428-253.000.

Mai, Chao: *See—*
Chan, Tsiu C.; Mai, Chao; and Hswe, Myint, 4,553,314, Cl. 29-571.000.

Maier, William B., II: *See—*
Freund, Samuel M.; Maier, William B., II; Holland, Redus F.; and Beattie, Willard H., 4,554,060, Cl. 204-157.10R.

Maingueneau, Gerard, to Mecanique des Moutiers Route de Loudun. Wood splitting machine with a threaded rotating cone. 4,553,576, Cl. 144-194.000.

Majewski, Klaus-Peter: *See—*
Lonne, Klaus; and Majewski, Klaus-Peter, 4,554,084, Cl. 252-12.400.

Majoie, Bernard, to Societe de Recherches Industrielles S.O.R.I. Phenoxyalkylcarboxylic acids. 4,554,371, Cl. 560-52.000.

Maki, Takayoshi: *See—*
Masamura, Tatsuro; Morikura, Masahiro; and Maki, Takayoshi, 4,554,672, Cl. 375-40.000.

Makino, Daisuke: *See—*
Kataoka, Fumio; Shoji, Fusaji; Yokono, Hitoshi; Makino, Daisuke; Koibuchi, Shigeru; and Isobe, Asao, 4,554,237, Cl. 430-197.000.

Malchow, Gregory L.; and Frohbieter, Edwin H., to Whirlpool Corporation. Room air conditioner with high capacity fresh air circulation means. 4,553,404, Cl. 62-262.000.

Malcolm, George D. Vehicle suspension. 4,553,774, Cl. 280-718.000.

Maldonado, Paul: *See*—
Hagenbach, Germain; Maldonado, Paul; and Maurice, Jacques, 4,554,313, Cl. 525-54.500.

Maldonado, Robert; and Loughry, Clark E., to S. S. White Company, The. Dental aiming device. 4,554,676, Cl. 378-170.000.

Malissin, Roland; and Monlouis, Claude, to Thomson-CSF. Focusing optical head movable radially by a carriage. 4,554,653, Cl. 369-45.000.

Maliszewicz, Marc: *See*—
Boutevin, Bernard; Deiss, Willy-Jean; Maliszewicz, Marc; and Pietrasanta, Yves, 4,554,373, Cl. 560-192.000.

Mancha, Clayton S. Pocket "E"-ring installation tool. 4,553,300, Cl. 29-235.000.

Mandel, Nathan: *See*—
Castellano, Thomas P.; and Mandel, Nathan, 4,553,468, Cl. 89-140.000.

Mannesmann Rexroth GmbH: *See*—
Reinhardt, Peter, 4,553,391, Cl. 60-413.000.

Manocha, Ajit S., to AT&T Bell Laboratories. Anistropic etching. 4,554,048, Cl. 156-643.000.

Manville Service Corporation: *See*—
Dawson, Raymond L.; Dodd, Clayton; Harrell, Bobby E.; and Lee, Grady E., 4,553,438, Cl. 73-830.000.

Marathon Oil Company: *See*—
Luetzelschwab, Wayne E., 4,553,594, Cl. 166-275.000.

Marcantonio, Paul J., to Chevron Research Company. Leaching metals from spent hydroprocessing catalysts with ammonium sulfate. 4,554,138, Cl. 423-53.000.

Marcatili, Enrique A. J.: *See*—
Alferness, Rodney C.; Korotky, Steven K.; and Marcatili, Enrique A. J., 4,553,810, Cl. 350-96.140.

Marchetti, Augusto. Machine for sealing variable-height parallelepipedal cartons. 4,554,042, Cl. 156-350.000.

Marcus, Daniel H., to Fingermatrix, Inc. Roll fingerprint processing apparatus. 4,553,837, Cl. 356-71.000.

Marcus, Konrad H., to Prince Corporation. Mounting bracket. 4,553,797, Cl. 339-22.000.

Marine Shield Corporation: *See*—
Lane, Thomas; and Rosen, Murray, 4,554,185, Cl. 427-385.500.

Marini, Paolo; and Candiotti, Marcello, to Centro Sperimentale Metallurgico SpA; and Terni - Societa per l'Industria e l'Elettricita SpA. High punchability heat resistant coating for sheet metal. 4,554,213, Cl. 428-418.000.

Mark, Harold W.: *See*—
Kimble, Kenneth B.; Mark, Harold W.; and Bresson, Clarence R., 4,554,068, Cl. 209-167.000.
Kimble, Kenneth B.; Mark, Harold W.; and Bresson, Clarence R., 4,554,108, Cl. 260-455.00A.

Mark, Victor, to General Electric Company. Process for the preparation of aromatic carbonates. 4,554,110, Cl. 260-463.000.

Mark, Victor; and Hedges, Charles V., to General Electric Company. Polycarbonate from cycloalkylidene tetra alkyl substituted diphenol. 4,554,309, Cl. 524-611.000.

Mark, Victor; and Hedges, Charles V., to General Electric Company. Polyestercarbonates exhibiting improved heat resistance from cycloalkylidene diphenol. 4,554,330, Cl. 525-462.000.

Markland, Richard D., to Consolidated Freightways, Inc. Air resistance reducing assembly for trucks. 4,553,782, Cl. 296-1.00S.

Markova, Marie: *See*—
Didek, Stanislav; Fajt, Ludvik; Reymanova, Marketa; and Markova, Marie, 4,553,383, Cl. 57-403.000.

Markovich, Voya: *See*—
Bupp, James R.; Lemon, Gary K.; Markovich, Voya; Sambucetti, Carlos J.; Tisdale, Stephen L.; and Trevitt, Donna J., 4,554,182, Cl. 427-304.000.

Marshall, Randall S. Articles for cooling beverages. 4,554,189, Cl. 428-11.000.

Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, to Roussel Uclaf. Process for the preparation of a bicyclic lactone through a sulfonated derivative. 4,554,361, Cl. 549-302.000.

Marten, Russell A.; and Townsend, Greg M., to Motorola, Inc. System for producing encoded and decoded voice, internal audio tones, and data communication within a time division multiplex network. 4,554,658, Cl. 370-85.000.

Martin, Frank E., to Westinghouse Electric Corp. Optical fiber cable construction. 4,553,815, Cl. 350-96.230.

Martin, Henry: *See*—
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,554,016, Cl. 71-105.000.

Martin-Jones, Christopher B.: *See*—
Collett, Geoffrey K.; Martin-Jones, Christopher B.; Tapner, Peter N.; Commander, David J.; Gilbey, Mark S.; and Berks, Robert S., 4,553,490, Cl. 112-38.000.

Martone, John A.: *See*—
Hwo, Charles C.; Klingensmith, George B.; and Martone, John A., 4,554,321, Cl. 525-240.000.

Maruta, Rikio: *See*—
Aiko, Shinichi; Maruta, Rikio; and Nishitani, Takao, 4,554,670, Cl. 375-30.000.

Marzocchi, Alfred: *See*—
Grossi, Anthony V.; Hahn, Louis T.; and Marzocchi, Alfred, 4,554,022, Cl. 106-273.00N.

Masamura, Tatsuro; Morikura, Masahiro; and Maki, Takayoshi, to Nippon Telegraph & Telephone Public Corp. Phase and frequency variable oscillator. 4,554,672, Cl. 375-40.000.

Maschinenfabrik Alfred Schmermund GmbH & Co.: *See*—
Lang, Gunter, 4,553,847, Cl. 356-445.000.

Maskell, Thomas J.: *See*—
Stein, Joseph L.; and Maskell, Thomas J., 4,554,035, Cl. 156-89.000.

Masson, Laverne F. Propane feeding device for internal combustion engines. 4,553,519, Cl. 123-527.000.

Matra: *See*—
Kerebel, Alain, 4,553,565, Cl. 137-590.000.

Matsubara, Toshiyuki: *See*—
Ise, Masahiro; Tanaka, Hidehiko; Machino, Katsuyuki; Matsubara, Toshiyuki; and Terasaka, Teiji, 4,554,532, Cl. 340-501.000.

Matsubara, Yoshitaka, to Kubota, Ltd. Control device. 4,553,446, Cl. 74-471.00R.

Matsuda, Hideaki: *See*—
Dohi, Hidemi; and Matsuda, Hideaki, 4,554,301, Cl. 524-210.000.

Matsuda, Keiji: *See*—
Takaya, Takao; Yasuda, Nobuyoshi; Tsutsumi, Hideo; and Matsuda, Keiji, 4,554,269, Cl. 514-35.000.

Matsui, Isamu; and Ueda, Yutaka, to Murata Kikai Kabushiki Kaisha. Defective package selector for winders. 4,553,708, Cl. 242-36.000.

Matsui, Katsumasa: *See*—
Kuraoka, Hiroaki; Mizuno, Toshinori; Matsui, Katsumasa; and Ohba, Masahiro, 4,553,427, Cl. 73-117.300.

Matsumoto, Akio; and Yamada, Takao, to Matsushita Electric Works, Ltd. Timepiece operated by solar cells. 4,553,851, Cl. 368-205.000.

Matsumoto, Kenji; and Suzuki, Yasuo, to Bridgestone Tire Company Limited. Pneumatic tires having a high resistance to cut growth. 4,553,579, Cl. 152-450.000.

Matsumura, Yasuo: *See*—
Yamazaki, Yasuo; Suzuki, Takehiko; Shimizu, Isoo; and Matsumura, Yasuo, 4,554,360, Cl. 549-261.000.

Matsunaga, Kuniyoshi: *See*—
Kosaka, Akira; Murao, Sawao; Hirano, Kenichi; Tanaka, Noriaki; and Matsunaga, Kuniyoshi, 4,554,249, Cl. 435-10.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Genji, Nobuo; Takahashi, Wataru; Nakamura, Masatatsu; and Kawai, Yoichi, 4,553,413, Cl. 68-12.00R.
Shimizu, Shoji; Asakawa, Shirow; Saito, Yukihiro; and Ito, Yoshimasa, 4,553,988, Cl. 55-158.000.
Taniuchi, Tetsuo; and Tsujimoto, Yoshinobu, 4,554,449, Cl. 250-227.000.
Uchida, Yoshihisa; and Yamashita, Kazuichi, 4,553,705, Cl. 242-4.00R.
Yamada, Takahiro, 4,554,485, Cl. 315-169.300.

Matsushita Electric Works, Ltd.: *See*—
Matsumoto, Akio; and Yamada, Takao, 4,553,851, Cl. 368-205.000.

Matsuzawa, Masanao: *See*—
Ikeda, Yoshito; Fujiwara, Hitoshi; Gomi, Yoshifumi; Matsuzawa, Masanao; and Hirashima, Yasuhito, 4,553,865, Cl. 400-124.000.

Matthews, William: *See*—
Brown, Douglas E.; and Matthews, William, 4,554,650, Cl. 367-154.000.

Mauchly, J. William: *See*—
Luthra, Ajay K.; Kassam, Saleem; and Mauchly, J. William, 4,553,437, Cl. 73-602.000.

Mauersberger, Paul H.: *See*—
Bercier, John R.; Cieslowski, Thomas C.; Delaquila, Gary E.; Leone, James W.; and Mauersberger, Paul H., 4,553,345, Cl. 40-576.000.

Maul, Rudolf; Stephan, Hans; and Wolf, Walter, to Ciba-Geigy Corporation. Continuous process for the preparation of alkyltin thiocarboxylic acid esters. 4,554,368, Cl. 556-91.000.

Maurice, Bruno: *See*—
Champon, Jacques; Maurice, Bruno; and Roumeguere, Michel, 4,554,568, Cl. 357-13.000.

Maurice, Jacques; Guesnet, Patrice; Tozzolino, Pierre; and Muller, Guy, to Societe Nationale Elf Aquitaine (Production). Enrichment of minerals by flotation and collector agents employed for this purpose. 4,554,137, Cl. 423-26.000.

Maurice, Jacques: *See*—
Hagenbach, Germain; Maldonado, Paul; and Maurice, Jacques, 4,554,313, Cl. 525-54.500.

Max-Planck-Gesellschaft zur: *See*—
Fischer, Herbert; Kickhofen, Botho; and Vaubel, Ekkehard, 4,554,156, Cl. 424-81.000.

Mayer, Andreas, to BBC Brown, Boveri & Company, Limited. Supercharged internal combustion engine with exhaust particulates filter. 4,553,387, Cl. 60-274.000.

Mayer, Edward F., to Ricoh Company, Ltd. Electrophotographic copying apparatus including an enlarged image developing station. 4,553,827, Cl. 355-3.0DD.

Mayer, Edward H.: *See*—
Cook, Joel M.; Flamm, Daniel L.; Mayer, Edward H.; and Seiler, Bernard C., 4,554,047, Cl. 156-643.000.

Mayo Foundation: *See*—
Dewanjee, Mrinal K., 4,553,974, Cl. 8-94.110.

Mazzorana, Alfred B., to Societe Paris-Rhone. Starter for heat engine comprising a reinforced support. 4,553,442, Cl. 74-7.00A.

McBride, Donald G.: *See*—
Canestaro, Michael J.; Kaschak, Ronald A.; McBride, Donald G.; and Seraphim, Donald P., 4,554,184, Cl. 427-345.000.

McCarty, Chris, to Harris Corporation. N Contact compensation technique. 4,553,315, Cl. 29-571.000.

McChesney, Charles E.: *See—*
Sinker, Stephen M.; Baron, Joseph J., Jr.; Rupp, Raymond W.; Doerr, Marvin L.; and McChesney, Charles E., 4,554,328, Cl. 525-437.000.
Sinker, Stephen M.; and McChesney, Charles E., 4,554,329, Cl. 525-437.000.

McClees, Nancy: *See—*
Ferguson, Keith; and McClees, Nancy, 4,553,967, Cl. 604-317.000.

McClelland, Gene E.: *See—*
Lei, Kenneth P. V.; Eisele, Judith A.; and McClelland, Gene E., 4,554,058, Cl. 204-110.000.

McClintock, Sam A.; and Purdy, William C., to Imasco-CDC Research Foundation. Dual working-electrode electrochemical detector for high performance liquid chromatography. 4,554,064, Cl. 204-411.000.

McCluney, Rebecca E.: *See—*
Husman, James R.; Kellen, James N.; McCluney, Rebecca E.; and Tumey, Michael L., 4,554,324, Cl. 525-301.000.

McConnell, Richard L.: *See—*
Hilbert, Samuel D.; and McConnell, Richard L., 4,554,206, Cl. 428-261.000.
Petke, Frederick D.; Ramsey, Charles W.; and McConnell, Richard L., 4,554,303, Cl. 524-277.000.

McCullin, Jan C.: *See—*
DeSordi, Marlette S.; DeSordi, Pete, III; McCullin, Jan C.; and McCullin, Sidney G., 4,553,287, Cl. 17-48.000.

McCullin, Sidney G.: *See—*
DeSordi, Marlette S.; DeSordi, Pete, III; McCullin, Jan C.; and McCullin, Sidney G., 4,553,287, Cl. 17-48.000.

McCulloch Corporation: *See—*
West, James F., 4,553,326, Cl. 30-381.000.

McCullough, John E., to E. R. Squibb & Sons, Inc. Method of increased production of penicillin acylase and plasmid employed therein. 4,554,250, Cl. 435-172.300.

McDonnell Douglas Corporation: *See—*
Lowe, James R., 4,554,545, Cl. 340-980.000.

McGarrah, Robert, to PepsiCo Inc. Bulk syrup delivery system. 4,553,573, Cl. 141-98.000.

McHale, John P.: *See—*
Napolitano, James E.; Bolton, Theodore S.; and McHale, John P., 4,553,405, Cl. 62-262.000.

McHenry, Robert J.; Pfutzenreuter, Henry, III; Tung, Thomas T.; and Vella, John, Jr., to American Can Company. Plastic containers with folded-over internal layers and methods for making same. 4,554,190, Cl. 428-35.000.

McIntosh, Harold A., to RobertShaw Controls Company. Protective shield for external electrical parts of a control arrangement and the combination thereof. 4,554,616, Cl. 361-424.000.

McKay, Gretchen L.: *See—*
Cosper, David R.; and McKay, Gretchen L., 4,554,026, Cl. 134-38.000.

McKibben, Barry A., to Tektronix, Inc. Resonant magnetic deflection circuit. 4,554,489, Cl. 315-399.000.

McLachlan, Craig J.: *See—*
Short, John P.; McLachlan, Craig J.; Messmer, Charles; and Reinecke, Paul S., 4,554,059, Cl. 204-129.300.

McLellan, Norvel J. No flash, very low noise howitzer round and tube. 4,553,480, Cl. 102-430.000.

McMahon, Matthew A.: *See—*
Crone, John M., Jr.; Kuhlmann, Erven J.; and McMahon, Matthew A., 4,553,499, Cl. 118-428.000.

McNaughton, James L.; and Petrozello, James R., to International Business Machines Corporation. Fiber optic connector system for integrated circuit modules. 4,553,813, Cl. 350-96.200.

Mead Corporation, The: *See—*
Adair, Paul C.; and Metz, George D., 4,554,235, Cl. 430-138.000.
Beaudet, William R.; Pepper, Mark A.; and Rester, David H., 4,554,558, Cl. 346-75.000.
Cousin, Michael J.; Hill, Larry O.; and Justice, Rhonda G., 4,554,181, Cl. 427-261.000.

Mears, Dana C., to University of Pittsburgh. Regeneration of living tissues by growth of isolated cells in porous implant and product thereof. 4,553,272, Cl. 623-1.000.

Mecanique des Moutiers Route de Loudun: *See—*
Maingueneau, Gerard, 4,553,576, Cl. 144-194.000.

Medico, Louis J., to Perkin-Elmer Corporation, The. Chuck handling device. 4,553,311, Cl. 29-559.000.

Medinvent S.A.: *See—*
Maass, Dierk; and Wallsten, Hans I., 4,553,545, Cl. 128-341.000.

Medtronic, Inc.: *See—*
Keimel, John G., 4,553,547, Cl. 128-419.0PG.

Meek, Dale E.; and Upchurch, James M., to Schlumberger Technology Corporation. Full bore sampler valve apparatus. 4,553,598, Cl. 166-317.000.

Meek, Jan: *See—*
Willemse, Kees; Meek, Jan; and Michelsen, Finn C., 4,553,878, Cl. 405-203.000.

Meeker, Brian L. Hardened portion of a fibrous product and a method for producing the same. 4,554,196, Cl. 428-67.000.

Meier, Dietrich; and Minder, Hans-Ulrich, to Kern & Co. AG. Method and apparatus for electrooptical distance measurement. 4,553,836, Cl. 356-5.000.

Meintrup, Robert A.: *See—*
Harvey, Richard D.; Hubbard, E. Daniel; and Meintrup, Robert A., 4,554,021, Cl. 106-213.000.

Meissner, David C.: *See—*
Summers, Frank V.; Meissner, David C.; and Brown, Ronald, 4,553,742, Cl. 266-156.000.

Melamine Chemicals, Inc.: *See—*
Freepons, Donald E., 4,554,003, Cl. 71-28.000.

Membrane Technology and Research, Inc.: *See—*
Baker, Richard W., 4,553,983, Cl. 55-16.000.

Merck & Co., Inc.: *See—*
Bock, Mark G.; and Freidinger, Roger M., 4,554,272, Cl. 514-219.000.
Ponpipom, Mitree M.; Shen, Tsung-Ying; and Bugianesi, Robert L., 4,554,349, Cl. 536-55.000.

Mercurio, Benardo: *See—*
Miller, William D.; Stiff, Omar L.; and Mercurio, Benardo, 4,553,900, Cl. 414-745.000.

Merten, Rudolf: *See—*
Sirinyan, Kirkor; Wolf, Gerhard D.; Merten, Rudolf; and von Gizycki, Ulrich, 4,554,183, Cl. 427-306.000.

Mery, Jean-Claude, to Allied Corporation. Disc brake. 4,553,645, Cl. 188-73.340.

Merz, Johann, to Zahnradfabrik Friedrichshafen, AG. High pressure pump with a flow control valve. 4,553,908, Cl. 417-310.000.

Messina, Celeste A.; Lok, Brent M.; and Flanigen, Edith M., to Union Carbide Corporation. Crystalline ferroaluminophosphates. 4,554,143, Cl. 423-306.000.

Messmer, Charles: *See—*
Short, John P.; McLachlan, Craig J.; Messmer, Charles; and Reinecke, Paul S., 4,554,059, Cl. 204-129.300.

Meszaros, Annamaria: *See—*
Farkas, Tibor; Vigh, Laszlo ; Horvath, Ibolya; Nagy nee Vanicsek, Aniko ; Foglein, Ferenc; Meszaros, Annamaria; and Toth, Istvan, 4,554,252, Cl. 435-240.000.

Metabi, Tsuneyo: *See—*
Ando, Makoto; Metabi, Tsuneyo; Miki, Yukio; and Egawa, Takeshi, 4,553,817, Cl. 350-255.000.

Metal Box p.l.c.: *See—*
Ashley, Robert J.; Bardhan, Nabendu; Hardy, Peter D.; and Jeffs, Keith D., 4,553,971, Cl. 604-415.000.

Mettler-Waagen GmbH: *See—*
Kusmenskji, Karl-Heinz; and Beck, Harald, 4,553,618, Cl. 177-185.000.

Metz, George D.: *See—*
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Metz, Rudi; and Scholl, Herbert, to EMAG Mashinenfabrik GmbH. Magnetic gripping device. 4,554,610, Cl. 361-144.000.

Meyerstein, Dan: *See—*
Kafri, Oded; Karny, Ziv; and Meyerstein, Dan, 4,553,839, Cl. 356-300.000.

Mezger, Hans; and Konneker, Reinhard, to Harley-Davidson Motor Co., Inc. Chain drive of a reciprocating-piston internal combustion engine. 4,553,509, Cl. 123-90.270.

Micafil AG: *See—*
Fischer, Bruno; and Andretta, Angelo, 4,553,319, Cl. 29-596.000.
Zihlmann, Siegfried; and Streiff, Werner, 4,553,321, Cl. 29-598.000.

Miccioli, William F.: *See—*
Fassett, Matthew; Toth, John F.; Lewis, Michael L.; and Miccioli, William F., 4,554,549, Cl. 343-700.0MS.

Miceli, Edward C.: *See—*
Pacini, Dino J.; Miceli, Edward C.; and Sturdevant, Norman J., Jr., 4,554,416, Cl. 179-170.0NC.

Michelsen, Finn C.: *See—*
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Micro Component Technology, Inc.: *See—*
Langley, Dennis C.; and Brekka, Thomas T., 4,553,843, Cl. 356-375.000.

Microsource, Inc.: *See—*
Basawapatna, Ganesh R., 4,554,516, Cl. 331-76.000.

Midrex International BV Rotterdam, Zurich Branch: *See—*
Summers, Frank V.; Meissner, David C.; and Brown, Ronald, 4,553,742, Cl. 266-156.000.

Mihovch, John: *See—*
Brauch, Robert B.; and Mihovch, John, 4,553,491, Cl. 112-465.000.

Miki, Atsushi; Mori, Etsunori; Hoshi, Minoru; and Higaki, Masaru, to Hitachi, Ltd. Winding for static induction apparatus. 4,554,523, Cl. 336-70.000.

Miki, Yukio: *See—*
Ando, Makoto; Metabi, Tsuneyo; Miki, Yukio; and Egawa, Takeshi, 4,553,817, Cl. 350-255.000.

Miles, Caesar J. Limit means for air jet responsive gyroscopes. 4,553,440, Cl. 74-5.430.

Miles Laboratories, Inc.: *See—*
Lewis, Dan, Jr., 4,553,970, Cl. 604-408.000.

Miles, Mary A. P.: *See—*
Miles, Perry E.; and Miles, Mary A. P., 4,553,513, Cl. 123-204.000.

Miles, Perry E.; and Miles, Mary A. P. Thermodynamic rotary engine. 4,553,513, Cl. 123-204.000.

Miller, Ellsworth S.: *See—*
Slavin, Michael; and Miller, Ellsworth S., 4,554,406, Cl. 174-94.00R.

Miller, Ira: *See—*
Davies, Robert B.; Miller, Ira; and Dotson, Robert N., 4,554,464, Cl. 307-265.000.
Rumbaugh, Robert C.; and Miller, Ira, 4,554,468, Cl. 307-355.000.

Miller, Kenneth F. Aromatic polycarbonate containing N,N-dialkyl amide mold release agent. 4,554,302, Cl. 524-233.000.

Miller, R. Lee, to Hilco House, Inc. Action toy and game. 4,553,946, Cl. 446-327.000.
Miller, William D.; Stiff, Omar L.; and Mercurio, Benardo, to William D. Miller, Inc. Apparatus for removing sprinkler pipe from a field. 4,553,900, Cl. 414-745.000.
Minder, Hans-Ulrich: *See*—
Meier, Dietrich; and Minder, Hans-Ulrich, 4,553,836, Cl. 356-5.000.
Mineck, Paul S. Reciprocating saw offset blade holder. 4,553,306, Cl. 29-401.100.
Mineral Deposits Ltd.: *See*—
Wright, Douglas C., 4,553,673, Cl. 209-697.000.
Minford, William J.; Murphy, Edmond J.; and Rice, Trudie C., to AT&T Bell Laboratories. Etching of titanium. 4,554,050, Cl. 156-664.000.
Ministere de l'Energie et des Ressources: *See*—
Guay, R. Edgar, 4,553,351, Cl. 47-58.000.
Ministry of International Trade and Industry: *See*—
Nakamura, Osamu; Ogino, Isao; and Adachi, Masakazu, 4,554,224, Cl. 429-30.000.
Minks, Werner, to International Standard Electric Corporation. Electromagnetic miniature relay. 4,554,520, Cl. 335-106.000.
Minks, Werner, to International Standard Electric Corporation. Electromagnetic relay. 4,554,522, Cl. 335-202.000.
Minnesota Mining and Manufacturing Company: *See*—
Aasen, Steven M., 4,553,941, Cl. 433-228.100.
Ball, James H., 4,554,401, Cl. 174-37.000.
Bushman, Stanley C., 4,554,238, Cl. 430-258.000.
Gardner, Richard N.; and Dillon, Kenneth R., 4,554,218, Cl. 428-567.000.
Huuman, James R.; Kellen, James N.; McCluney, Rebecca E.; and Tumey, Michael L., 4,554,324, Cl. 525-301.000.
Korbel, Gerald E.; Robins, Janis; and Rude, Harold E., 4,553,982, Cl. 51-298.000.
Niles, Gerald J., 4,553,871, Cl. 401-195.000.
Tye, Ronald G., 4,554,424, Cl. 200-86.00R.
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Mints, Danny K.: *See*—
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Miracle Metals, Inc.: *See*—
Badger, Philip O., 4,553,417, Cl. 72-42.000.
Mishima, Fumiyuki: *See*—
Takenoya, Hideaki; and Mishima, Fumiyuki, 4,553,870, Cl. 400-662.000.
Miskin, Richard B. Scraper with ripper assembly. 4,553,608, Cl. 172-197.000.
Mitchell, Richard T. Oil well drilling apparatus. 4,553,591, Cl. 166-76.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Fujiwara, Kunio; Katoo, Hisashi; Satoo, Fumihide; and Taki, Hirokazu, 4,554,498, Cl. 318-640.000.
Gotoh, Hitoshi, 4,554,476, Cl. 310-239.000.
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Tanaka, Toshinori; and Yabunaka, Kiyoshi, 4,553,441, Cl. 74-7.00R.
Kojiro, Tetsuya; and Takeda, Jun, 4,553,812, Cl. 350-96.200.
Kumatani, Hiroshi, 4,554,472, Cl. 310-62.000.
Morishita, Akira; and Okamoto, Kyoichi, 4,554,474, Cl. 310-154.000.
Morishita, Etsuo; Sugihara, Masahiro; Inaba, Tsutomu; and Nakamura, Toshiyuki, 4,553,913, Cl. 418-55.000.
Takawashi, Tamio; Sakakibara, Toshimitsu; and Yamada, Shigeo, 4,554,428, Cl. 219-69.00G.
Uetani, Kenichi, 4,553,639, Cl. 187-29.00R.
Yoshimoto, Masahiko; Yoshihara, Tsutomu; Anami, Kenji; and Shinohara, Hirofumi, 4,554,646, Cl. 365-189.000.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Gaku, Morio; Kimbara, Hidenori; and Yokoi, Jun, 4,554,346, Cl. 528-363.000.
Mitsugi, Makinoda: *See*—
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Mitsui, Kenji; and Suzuki, Akira, to Photoron Incorporated. Method of electromagnetically reading coordinate data. 4,554,409, Cl. 178-19.000.
Mitsui, Seizo: *See*—
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Mitutoyo Mfg. Co., Ltd.: *See*—
Uchino, Kenju; and Sakai, Tomoo, 4,553,329, Cl. 33-147.00T.
Yamauchi, Mineo; and Karahashi, Yoshimitu, 4,553,330, Cl. 33-164.00R.
Mitzel, Wilhelm; Geier, Josef; and Leutholdt, Karl, to GAO Gesellschaft fur Automation und Organisation mbH. Device for removing a band from a sheet bundle. 4,553,312, Cl. 29-564.300.
Miura, Kunio: *See*—
Gomi, Shimpei; Arai, Tomio; Mogi, Fumio; Miura, Kunio; and Otani, Sugio, 4,554,148, Cl. 423-447.100.
Miura, Seishi: *See*—
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Miwada, Kazuo, to Nippon Electric Co., Ltd. Charge transfer device operative at high speed. 4,554,675, Cl. 377-60.000.
Miyaki, Yoshiyuki: *See*—
Fujimoto, Teruo; Isono, Yoshinobu; and Miyaki, Yoshiyuki, 4,554,376, Cl. 562-554.000.
Miyazi, Kazumi: *See*—
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Mizoguchi, Yasumitsu: *See*—
Maeda, Takeshi; Tsunoda, Yoshito; Huno, Takakazu; Takasago, Masahiro; and Mizoguchi, Yasumitsu, 4,554,652, Cl. 369-44.000.
Mizukami, Akihiko; and Shimaya, Tetsushi, to Kyocera Corporation. Device for collecting solar heat. 4,553,530, Cl. 126-422.000.
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Mobay Chemical Corporation: *See*—
Chung, James Y. J.; Neuray, Dieter; and Witman, Mark W., 4,554,314, Cl. 525-67.000.
Chung, James Y. J.; Carter, Russell P., Jr.; and Neuray, Dieter, 4,554,315, Cl. 525-67.000.
Mobil Oil Corporation: *See*—
Albinson, Kenneth R.; and Child, Jonathan E., 4,554,065, Cl. 208-59.000.
Anderson, Thomas L.; and Herrington, F. John, 4,553,370, Cl. 53-117.000.
Benoit, Gordon L., 4,554,192, Cl. 428-35.000.
Chang, Clarence D.; and Chu, Cynthia T. W., 4,554,396, Cl. 585-531.000.
Dessau, Ralph M., 4,554,262, Cl. 502-62.000.
Forbus, Nancy P.; and Kaeding, Warren W., 4,554,394, Cl. 585-474.000.
Rafipour, Bijan J., 4,554,647, Cl. 367-48.000.
Rubin, Mae K., 4,554,145, Cl. 423-328.000.
Mod, William A.: *See*—
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Moessinger, Albert; Gosciniak, Guy; and Angebault, Joel, to Societe Alsacienne de Construction de Material Textile. Process for the insertion in the form of a loop of a weft yarn in the shed of a weaving machine and weaving machine equipped with a device for carrying out this process. 4,553,570, Cl. 139-435.000.
Mogi, Fumio: *See*—
Gomi, Shimpei; Arai, Tomio; Mogi, Fumio; Miura, Kunio; and Otani, Sugio, 4,554,148, Cl. 423-447.100.
Mohr, Dieter, to Hoechst Aktiengesellschaft. Process for manufacturing support materials for offset printing plates. 4,554,057, Cl. 204-29.000.
Mohr, Dieter, to Hoechst Aktiengesellschaft. Process for manufacturing support materials for offset printing plates. 4,554,216, Cl. 428-469.000.
Mole, Thomas: *See*—
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Molins plc: *See*—
Bennett, George R.; and Day, Robert S., 4,553,660, Cl. 198-425.000.
Molzahn, Marcelle G.: *See*—
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Mommsen, Gordon V.; and Hemming, Dale R., to Graco Inc. Compact voltage multiplier for spray guns. 4,554,622, Cl. 363-61.000.
Monarch Marking Systems, Inc.: *See*—
Kirby, Raymond L., Jr., 4,553,476, Cl. 101-111.000.
Monlouis, Claude: *See*—
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Monolithic Memories, Inc.: *See*—
Wong, Sing Y.; and Birkner, John M., 4,554,640, Cl. 364-716.000.
Monsanto Company: *See*—
Heaps, John F.; and Erickson, Dennis E., 4,554,319, Cl. 525-155.000.
Sikorski, James A.; and Hoobler, Mary A., 4,554,009, Cl. 071-087.000.
Monson, Wayne R.: *See*—
Wickham, Thomas D.; and Monson, Wayne R., 4,554,624, Cl. 364-148.000.
Mora, Erwin P., to Dana Corporation. Fuse loss indicating circuit. 4,554,607, Cl. 361-104.000.
Morando, E. Donald, to Queen Anne Candy Company. Egg carton adapter. 4,553,691, Cl. 229-2.5EC.
Morgan, James T., Jr. Process for producing pre-press color proofs. 4,553,835, Cl. 355-77.000.
Mori, Etsunori: *See*—
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Mori, Toshihiro; and Nagata, Koichi, to Nippon Electric Co., Ltd. Signal format detection circuit for digital radio paging receiver. 4,554,540, Cl. 340-825.440.
Morikura, Masahiro: *See*—
Masamura, Tatsuro; Morikura, Masahiro; and Maki, Takayoshi, 4,554,672, Cl. 375-40.000.
Morimoto, Keisuke, to General Foods Corporation. Extrusion process for shrimp or crabmeat analog products in a series of non-boiling gelling baths. 4,554,166, Cl. 426-276.000.
Morimoto, Seiichi: *See*—
Ishii, Katsuyoshi; Kobori, Michio; and Morimoto, Seiichi, 4,554,255, Cl. 436-102.000.
Morin, Pierre: *See*—
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Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,015, Cl. 71-100.000.
Morishita, Akira; and Okamoto, Kyoichi, to Mitsubishi Denki Kabushiki Kaisha. Stator for a magnet motor. 4,554,474, Cl. 310-154.000.
Morishita, Akira: *See*—
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Tanaka, Toshinori; and Yabunaka, Kiyoshi, 4,553,441, Cl. 74-7.00R.
Morishita, Etsuo; Sugihara, Masahiro; Inaba, Tsutomu; and Nakamura, Toshiyuki, to Mitsubishi Denki Kabushiki Kaisha. Scroll-type hydraulic machine. 4,553,913, Cl. 418-55.000.
Morita, Youske: *See*—
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Moriya, Michio, to Sumitomo Electric Industries, Ltd. Vehicle deceleration sensing type two-system liquid pressure control valve. 4,553,787, Cl. 303-6.00C.
Moriyama, Yoshiaki; and Yamagata, Kenji, to Pioneer Electronic Corporation. Method for converting binary data train. 4,554,529, Cl. 340-347.0DD.
Morris, Daniel C. Device for the prevention of flooding from drainage systems. 4,553,561, Cl. 137-362.000.
Morris, Henrietta K., to Surgikos, Inc. Bilateral fenestrated drape. 4,553,539, Cl. 128-132.00D.
Mosholder, Michael, to Tokyo Shibaura Denki Kabushiki Kaisha. Device for pressure fusing images onto paper in electrostatic copiers. 4,553,826, Cl. 355-3.0FU.
Mostek Corporation: *See*—
Chan, Tsiu C.; Mai, Chao; and Hswe, Myint, 4,553,314, Cl. 29-571.000.
Moteurs Leroy-Somer: *See*—
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Motorola, Inc.: *See*—
Beesley, Graham E., 4,554,665, Cl. 371-55.000.
Capurka, Zbynek A., 4,553,426, Cl. 73-116.000.
Davies, Robert B.; Miller, Ira; and Dotson, Robert N., 4,554,464, Cl. 307-265.000.
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Marten, Russell A.; and Townsend, Greg M., 4,554,658, Cl. 370-85.000.
Rumbaugh, Robert C.; and Miller, Ira, 4,554,468, Cl. 307-355.000.
Smith, Paul F.; Schorman, Eric; Burke, Timothy M.; and Lynk, Charles N., Jr., 4,554,677, Cl. 455-54.000.
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Moulin, Michel; and Risse, Jean-Claude, to Autologic, S.A. Photocomposing apparatus and method. 4,553,825, Cl. 354-5.000.
Moutonnier, Claude: *See*—
Le Roy, Pierre; Farge, Daniel; Moutonnier, Claude; Peyronel, Jean-Francois; and Plau, Bernard, 4,554,350, Cl. 544-22.000.
Moynihan, John T., to American Newspaper Publishers Association. Letterpress printing ink. 4,554,019, Cl. 106-27.000.
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MSL Industries, Inc.: *See*—
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MuAddi, Farid: *See*—
Harkins, Desira; and MuAddi, Farid, 4,553,687, Cl. 225-93.000.
Mueller Co.: *See*—
Daghe, Joseph L.; and Sands, Robert E., 4,553,563, Cl. 137-494.000.
Muhl, Bradley G. Beverage display shelving. 4,553,486, Cl. 108-108.000.
Mukae, Makito; and Oshima, Tsuginori, to Bridgestone Tire Company Ltd. Method of and apparatus for transferring annular articles from one stage to another. 4,553,894, Cl. 414-331.000.
Mulder, Albertus J., to Shell Oil Company. Process for preparing oxabicycloalkane compounds. 4,554,365, Cl. 549-463.000.
Muller, A. Bromley, to Becton, Dickinson and Co. Shunt valve and method of use. 4,553,956, Cl. 604-9.000.
Muller, Edwin: *See*—
Braun, Moritz; Kaufmann, Anna; and Muller, Edwin, 4,554,063, Cl. 204-254.000.
Muller, George H., to Ford Motor Company. Tire height sensor with valve stem attaching transmitter module. 4,554,527, Cl. 340-58.000.
Muller, Guy: *See*—
Maurice, Jacques; Guesnet, Patrice; Tozzolino, Pierre; and Muller, Guy, 4,554,137, Cl. 423-26.000.
Muller, Rolf, to Papst-Motoren GmbH & Co. KG. Brushless direct current motor system. 4,554,473, Cl. 310-67.00R.
Munch Jensen, Jorn, to Ejnar Jensen & Son Maskinfabrik A/S. Apparatus for feeding pieces of laundry on a conveyor. 4,553,662, Cl. 198-456.000.
Munk, Kurt: *See*—
Babler, Fridolin; and Munk, Kurt, 4,554,094, Cl. 252-518.000.
Munro, Robert; Parker, David A.; and Graham, Neil A. Pistons and method for their manufacture. 4,553,472, Cl. 92-176.000.
Murakami, Kakuji: *See*—
Aruga, Tamotsu; Fujii, Tadashi; Murakami, Kakuji; and Akutsu, Eiichi, 4,554,555, Cl. 346-1.100.
Muramatsu, Shinichi: *See*—
Kobayashi, Hiroshi; Muramatsu, Shinichi; Ichikawa, Yoshiro; and Mitsui, Seizo, 4,553,501, Cl. 118-669.000.
Murao, Sawao: *See*—
Kosaka, Akira; Murao, Sawao; Hirano, Kenichi; Tanaka, Noriaki; and Matsunaga, Kuniyoshi, 4,554,249, Cl. 435-10.000.
Murata, Kenji: *See*—
Sounai, Atuo; and Murata, Kenji, 4,554,225, Cl. 429-34.000.
Murata Kikai Kabushiki Kaisha: *See*—
Kato, Hisaaki, 4,553,290, Cl. 19-244.000.
Matsui, Isamu; and Ueda, Yutaka, 4,553,708, Cl. 242-36.000.
Murata Manufacturing Co., Ltd.: *See*—
Kanoh, Osamu; and Senda, Atsuo, 4,554,209, Cl. 428-334.000.
Murayama, Hisao: *See*—
Hashimoto, Mitsuru; Kawabata, Toshiyasu; Nanya, Toshiki; and Murayama, Hisao, 4,554,233, Cl. 430-106.600.
Murchison, Craig B.: *See*—
Klun, Robert T.; Murchison, Craig B.; and Hucul, Dennis A., 4,554,391, Cl. 570-231.000.
Murphy, Arthur J.; and Stratton, Joseph F. Supermarket inventory control system and method. 4,554,446, Cl. 235-487.000.
Murphy, Edmond J.: *See*—
Minford, William J.; Murphy, Edmond J.; and Rice, Trudie C., 4,554,050, Cl. 156-664.000.
Murphy, Peter. Electrical outlet. 4,553,798, Cl. 339-9.00R.
Muschelknautz, Edgar; Rink, Norbert; and Chalupka, Georg, to Bayer Aktiengesellschaft. Process for producing mineral wool fibers while reducing the velocity of flowing media. 4,553,996, Cl. 65-4.400.
Musser, John H., to American Home Products Corporation. Heterocyclic compounds as antiallergic agents. 4,554,355, Cl. 548-180.000.
Mussigmann, Artur: *See*—
Becker, Reinhard, deceased; Seber, Gudula, legal representative; Becker, Ulrich, legal representative; Becker, Hans C., legal representative; Becker, Gero, legal representative; Mussigmann, Artur; and Schurr, Anton, 4,553,811, Cl. 350-96.200.
Mussmann, Richard F., to AT&T Bell Laboratories. Method and apparatus for scanning a matrix of switchable elements. 4,554,530, Cl. 340-365.00S.
Muto, Toshimi: *See*—
Chiba, Iwane; Fujiwara, Junji; Kuwamoto, Hiroshi; izushi, Tomoya; Muto, Toshimi; and Toyama, Haruji, 4,554,087, Cl. 252-49.900.
Myers, Lawrence R.: *See*—
Gaiser, Robert F.; and Myers, Lawrence R., 4,553,651, Cl. 192-13.00A.
Myllyla , Risto: *See*—
Ahola, Raimo; Kopola, Harri; and Myllyla , Risto, 4,553,943, Cl. 434-22.000.
Myooi, Tetsuo: *See*—
Haneda, Isamu; and Myooi, Tetsuo, 4,554,641, Cl. 364-710.000.
N-Viro Energy Systems Ltd.: *See*—
Nicholson, John P., 4,554,002, Cl. 71-12.000.
Nadkarni, Pradeep D.: *See*—
Piccoli, Dante E.; and Nadkarni, Pradeep D., 4,553,568, Cl. 138-125.000.
Nafziger, John L.; Rader, Laura A.; and Seward, Irwin J., Jr., to Dow Chemical Company, The. Process for preparing polyamines with ion exchange resin catalysts. 4,554,378, Cl. 564-332.000.
Nagano, Fumikazu; and Shirakoshi, Hiroshi, to Sharp Kabushiki Kaisha. Drive system in a multi-pin-electrode electrostatic recording apparatus. 4,554,563, Cl. 346-154.000.
Nagata, Koichi: *See*—
Mori, Toshihiro; and Nagata, Koichi, 4,554,540, Cl. 340-825.440.
Nagatani, Nobuaki: *See*—
Terajima, Yoshimi; Akitoshi, Hiroshi; and Nagatani, Nobuaki, 4,553,693, Cl. 229-7.00S.
Nagayasu, Koichi: *See*—
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Nagy nee Vanicsek, Aniko : *See*—
Farkas, Tibor; Vigh, Laszlo ; Horvath, Ibolya; Nagy nee Vanicsek, Aniko ; Foglein, Ferenc; Meszaros, Annamaria; and Toth, Istvan, 4,554,252, Cl. 435-240.000.
Naiman, Michael I.; and Schield, John A., to Petrolite Corporation. Ester-containing halopolyalkylenes. 4,553,980, Cl. 44-62.000.
Naiman, Michael I.; and Schield, John A., to Petrolite Corporation. Ester-containing halopolyalkylenes. 4,554,327, Cl. 525-356.000.
Nakada, Morihito, to Toyo Kako Kabushiki Kaisha. Resin-molded valve and method of making the same. 4,553,562, Cl. 137-375.000.
Nakagawa, Yasuo; Oshida, Yoshitada; and Ishige, Kanji, to Hitachi, Ltd. Configuration detecting method and system. 4,553,844, Cl. 356-376.000.
Nakai, Toshihiko, to Citizen Watch Co., Ltd. Dot printer control system. 4,553,867, Cl. 400-323.000.
Nakajima, Hiroshi: *See*—
Imahori, Kazutomo; Iwasaki, Tatsuo; Nakajima, Hiroshi; Kondo, Hitoshi; Tomioka, Isao; Kashima, Masaru; and Tsukamoto, Toshihiko, 4,554,253, Cl. 435-288.000.
Nakamichi, Toshihiro: *See*—
Tasaka, Yoshihiro; Nakamichi, Toshihiro; and Katsuhara, Yutaka, 4,554,382, Cl. 568-404.000.

Nakamura, Akira: *See*—
Kamei, Ryosuke; Kobayashi, Keiitsu; Nakamura, Akira; Shimamura, Toshikazu; Tsukada, Masamitsu; and Ono, Hisashi, 4,554,202, Cl. 428-225.000.
Nakamura, Hisatsugu. Speaker system. 4,553,628, Cl. 181-145.000.
Nakamura, Kenichi: *See*—
Sakagami, Teruo; Arakawa, Noriyuki; Teramoto, Yoshikichi; and Nakamura, Kenichi, 4,554,335, Cl. 526-249.000.
Nakamura, Masatatsu: *See*—
Genji, Nobuo; Takahashi, Wataru; Nakamura, Masatatsu; and Kawai, Yoichi, 4,553,413, Cl. 68-12.00R.
Nakamura, Osamu; Ogino, Isao; and Adachi, Masakazu, to Agency of Industrial Science and Technology; and Ministry of International Trade and Industry. Hydrogen-oxygen solid electrolyte fuel cell. 4,554,224, Cl. 429-30.000.
Nakamura, Teruya: *See*—
Sano, Susumu; Ikai, Katsushige; Kuroda, Hiroyuki; Nakamura, Teruya; Enomoto, Hiroshi; and Ezure, Yoji, 4,554,289, Cl. 514-450.000.
Nakamura, Toshiyuki: *See*—
Morishita, Etsuo; Sugihara, Masahiro; Inaba, Tsutomu; and Nakamura, Toshiyuki, 4,553,913, Cl. 418-55.000.
Nakamura, Yasuo, to Sanden Corporation. Clutch rotor for an electromagnetic clutch and method of making the rotor. 4,553,690, Cl. 29-159.00R.
Nakanishi, Akira: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,012, Cl. 71-92.000.
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,015, Cl. 71-100.000.
Nakasuji, Norikazu: *See*—
Kito, Tutomu; Nakasuji, Norikazu; Kataoka, Takashi; Inagaki, Hiroshi; and Shibahashi, Yutaka, 4,554,565, Cl. 346-201.000.
Nakayama, Kenichiro: *See*—
Suzuki, Takanobu; Nakayama, Kenichiro; Takahashi, Izumi; and Sugiyama, Terumasa, 4,554,662, Cl. 371-20.000.
Nakazato, Seiichi: *See*—
Tsurumaru, Michiko; Nakazato, Seiichi; Nunokawa, Atsushi; Ueno, Hiroshi; and Kobayashi, Seishichi, 4,553,682, Cl. 220-75.000.
Nalco Chemical Company: *See*—
Cosper, David R.; and McKay, Gretchen L., 4,554,026, Cl. 134-38.000.
Namba, Yuzuru; Aoyagi, Kenichi; and Yokoyama, Hiroshi, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine. 4,553,514, Cl. 123-308.000.
Nanya, Toshiki: *See*—
Hashimoto, Mitsuru; Kawabata, Toshiyasu; Nanya, Toshiki; and Murayama, Hisao, 4,554,233, Cl. 430-106.600.
Napolitano, James E.; Bolton, Theodore S.; and McHale, John P., to Carrier Corporation. Vent assembly for use with an air conditioning unit. 4,553,405, Cl. 62-262.000.
National Research Development Corporation: *See*—
Skelly, Jacinta; Howard, Colin R.; and Zuckerman, Arie J., 4,554,157, Cl. 424-89.000.
Nebo Pumps Pty. Ltd.: *See*—
Gosschalk, Terry, 4,553,910, Cl. 417-378.000.
NEC Corporation: *See*—
Aiko, Shinichi; Maruta, Rikio; and Nishitani, Takao, 4,554,670, Cl. 375-30.000.
Neefe, Charles W. Method of controlling the convex curve of soft lenses. 4,554,115, Cl. 264-1.100.
Neel, Emmanuel E. A.; Levavasseur, Jacques A.; and Reinalda, Donald, to Shell Oil Company. Process for the preparation of modified refractory oxides. 4,554,268, Cl. 502-439.000.
Negoro, Hisao. Dust guard for a scroll chuck. 4,553,765, Cl. 279-1.0ME.
Nehmiz, Peter: *See*—
Behringer, Uwe; Bohlen, Harald; Kulcke, Werner; and Nehmiz, Peter, 4,554,458, Cl. 250-492.200.
Nelboeck, Michael: *See*—
Homann, Ernst; Nelboeck, Michael; Schlieder, Klaus; and Bayer, Gernold, 4,553,553, Cl. 128-749.000.
Nelson, Arthur J. Tow of barges by tugs. 4,553,497, Cl. 114-246.000.
Nelson, James A.: *See*—
Lazarus, Harrison; and Nelson, James A., 4,553,960, Cl. 604-158.000.
Nelson, Robert L.; and Stough, Donald M., to Westinghouse Electric Corp. Jackshaft controlled boiler combustion control system. 4,553,924, Cl. 431-12.000.
Neogi, Amar N.: *See*—
Allan, George G.; and Neogi, Amar N., 4,554,155, Cl. 424-22.000.
Netravali, Arun N.: *See*—
Budrikis, Zigmantas L.; and Netravali, Arun N., 4,554,656, Cl. 370-85.000.
Neubert, Wolfgang: *See*—
Schneider, Manfred; Barth, Gerhard; Barth, Johannes; and Neubert, Wolfgang, 4,553,288, Cl. 19-113.000.
Neugebauer, Steffen; and Scharting, Gunter, to Fag Kugelfischer Georg Schafer (KGaA). Bottom plate for a bushing mounted via rolling elements on a pin. 4,553,858, Cl. 384-473.000.
Neuray, Dieter: *See*—
Chung, James Y. J.; Neuray, Dieter; and Witman, Mark W., 4,554,314, Cl. 525-67.000.
Chung, James Y. J.; Carter, Russell P., Jr.; and Neuray, Dieter, 4,554,315, Cl. 525-67.000.
Neuromedics, Inc.: *See*—
Varrichio, Anthony J.; and Gordon, Pat L., 4,553,548, Cl. 128-421.000.
New York Blood Center, Inc.: *See*—
Hopp, Thomas P., 4,554,101, Cl. 260-112.50R.
Newman, Neil F.: *See*—
Kowalski, Ronald C.; Davis, William M.; Newman, Neil F.; Foroulis, Z. Andrew; and Baldwin, Francis P., 4,554,326, Cl. 525-354.000.
Newsom, Cosby M. Portable vacuum device and method of using same. 4,554,036, Cl. 156-94.000.
Ney, Robert J. Reversible journal bearing uniflow lubrication system. 4,553,857, Cl. 384-398.000.
Nguyen, Tuan A., to Xerox Corporation. Servicing system for reproduction machines. 4,553,830, Cl. 355-14.00R.
Nichols, Kenneth: *See*—
Hooper, Ronald; and Nichols, Kenneth, 4,553,439, Cl. 74-5.400.
Nichols, Ralph A.: *See*—
Gergely, Anthony J.; and Nichols, Ralph A., 4,554,261, Cl. 502-62.000.
Nichols, Richard E.; and Delaruelle, Dale H., to Harris Corporation. Railroad air brake system. 4,553,723, Cl. 246-167.00R.
Nicholson, John P., to N-Viro Energy Systems Ltd. Beneficiating waste sludges for agricultural use and product made thereby. 4,554,002, Cl. 71-12.000.
Nicolai, Walter. Determining and indicating the quantity of a stored material. 4,553,431, Cl. 73-290.00B.
Niedrach, Leonard W.: *See*—
Wengrovius, Jeffrey H.; and Niedrach, Leonard W., 4,554,310, Cl. 524-715.000.
Nike, Inc.: *See*—
Derderian, Thomas; and Richard, Daniel J., 4,553,342, Cl. 36-97.000.
Nikko Kakoozai Co., Ltd.: *See*—
Hattori, Morihisa, 4,553,550, Cl. 128-505.000.
Niles, Gerald J., to Minnesota Mining and Manufacturing Company. Device for cleaning phonograph stylus. 4,553,871, Cl. 401-195.000.
Nilssen, Ole K. Electronic fluorescent lamp ballast with overload protection. 4,554,487, Cl. 315-224.000.
Nippon Electric Co., Ltd.: *See*—
Miwada, Kazuo, 4,554,675, Cl. 377-60.000.
Mori, Toshihiro; and Nagata, Koichi, 4,554,540, Cl. 340-825.440.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Kawashima, Susumu; and Yamada, Shigeru, 4,553,465, Cl. 84-1.030.
Nippon I.C.S. Co., Ltd.: *See*—
Iitsuka, Yoshitsune, 4,553,371, Cl. 53-285.000.
Nippon Kogaku K.K.: *See*—
Ooi, Kazushige; Fujiwara, Shigekazu; Yoshida, Nobuaki; and Sukegawa, Tsuneo, 4,554,587, Cl. 358-228.000.
Nippon Kokan Kabushiki Kaisha: *See*—
Chiba, Iwane; Fujiwara, Junji; Kuwamoto, Hiroshi; izushi, Tomoya; Muto, Toshimi; and Toyama, Haruji, 4,554,087, Cl. 252-49.900.
Yamada, Takeo; Harada, Naoki; and Imai, Kiyotaka, 4,553,854, Cl. 374-129.000.
Nippon Oil and Fats Company, Limited: *See*—
Hattori, Katsuhide; Fukatsu, Yoshiaki; and Sakai, Hiroshi, 4,554,032, Cl. 149-21.000.
Nippon Petrochemicals Company, Limited: *See*—
Yamazaki, Yasuo; Suzuki, Takehiko; Shimizu, Isoo; and Matsumura, Yasuo, 4,554,360, Cl. 549-261.000.
Nippon Shinyaku Co., Ltd.: *See*—
Sano, Susumu; Ikai, Katsushige; Kuroda, Hiroyuki; Nakamura, Teruya; Enomoto, Hiroshi; and Ezure, Yoji, 4,554,289, Cl. 514-450.000.
Sempuku, Kenji; Shibata, Yoshihisa; and Ohgi, Tadaaki, 4,554,275, Cl. 514-245.000.
Nippon Soken, Inc.: *See*—
Tsuge, Noboru; and Taguchi, Masahiro, 4,553,625, Cl. 180-268.000.
Nippon Telegraph & Telephone Public Corp.: *See*—
Masamura, Tatsuro; Morikura, Masahiro; and Maki, Takayoshi, 4,554,672, Cl. 375-40.000.
Nippondenso Co., Ltd.: *See*—
Hayakawa, Shoichi; and Saito, Muneo, 4,553,511, Cl. 123-179.00B.
Kuraoka, Hiroaki; Mizuno, Toshinori; Matsui, Katsumasa; and Ohba, Masahiro, 4,553,427, Cl. 73-117.300.
Takao, Mitsunori; Kimura, Takahiko; and Omori, Norio, 4,553,518, Cl. 123-478.000.
Nishida, Tetsuya: *See*—
Katayama, Yoshiyuki; and Nishida, Tetsuya, 4,553,605, Cl. 172-2.000.
Nishitani, Takao: *See*—
Aiko, Shinichi; Maruta, Rikio; and Nishitani, Takao, 4,554,670, Cl. 375-30.000.
Nissan Motor Co., Ltd.: *See*—
Hirano, Yoshinori; Kondo, Masahiko; and Kubozuka, Takao, 4,553,505, Cl. 123-41.200.
Nisshin Oil Mills, Ltd.: *See*—
Yamamoto, Nobuyuki; Ryoke, Katsumi; Tsuji, Nobuo; Higaki, Yuzo; and Okamura, Toshihisa, 4,554,220, Cl. 428-694.000.
Nitschke, Manfred: *See*—
Goldrian, Gottfried; Nitschke, Manfred; Rudolph, Volker; and Wohnsdorf, Manfred, 4,553,862, Cl. 400-121.000.
Nitto Hogei Co., Ltd.: *See*—
Takao, Masayasu, 4,554,107, Cl. 260-421.000.

NL Industries, Inc.: *See*—
Grainger, Alfred J., 4,553,615, Cl. 175-329.000.
Noda, Sadafumi; and Zimmern, Bernard, to Zimmern, Bernard. Method of lubricating bearings of a refrigeration or the like compressor. 4,553,399, Cl. 62-84.000.
Noda, Shinji: *See*—
Chikamasa, Hiroshi; and Noda, Shinji, 4,554,177, Cl. 427-130.000.
Noda, Yasushi: *See*—
Kashiwagi, Yoshiyuki; Noda, Yasushi; and Kitakizaki, Kaoru, 4,554,425, Cl. 200-144.00B.
Nodiff, Edward A.: *See*—
Saggiomo, Andrew J.; and Nodiff, Edward A., 4,554,279, Cl. 514-311.000.
Noell, Godwin L.; and Sundberg, Jack G., to Chandler Evans Inc. Method and apparatus for main fuel pumping system having backup pump. 4,553,914, Cl. 418-69.000.
Nogami, Taro; and Tsukada, Masamichi, to Hitachi, Ltd. Double monochrometer. 4,553,840, Cl. 356-333.000.
Noirel, Yves M.; Vardo, Jean-Claude; and Chevee, Gerard, to L'Etat Francais, represente par le Ministre des P.T.A. (Centre National d'Etudes des Telecommunications CNET); and Etablissement Public de Diffusion dit "Telediffusion de France". One-way data transmission system. 4,554,660, Cl. 370-94.000.
Nojiri, Hidetoshi: *See*—
Sakaki, Hiroyuki; Tanoue, Tomonori; and Nojiri, Hidetoshi, 4,553,317, Cl. 29-572.000.
Nomoto, Reishi; Takahashi, Masayoshi; and Ebata, Yoshikazu, to Janome Sewing Machine Co. Ltd. Suturing instrument for surgical operation. 4,553,544, Cl. 128-340.000.
Nonaka, Yuji: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,012, Cl. 71-92.000.
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Noptel Ky: *See*—
Ahola, Raimo; Kopola, Harri; and Myllyla , Risto, 4,553,943, Cl. 434-22.000.
Norandex Inc.: *See*—
Smyth, Laurence C., 4,554,123, Cl. 264-166.000.
Norbeck, Dean K.; and Schnetzka, Harold R., to Borg-Warner Corporation. Trigger circuit for solid state switch. 4,554,463, Cl. 307-252.00H.
Norde, Herman: *See*—
Tove, Per-Arne; Bohlin, Kjell; Stolt, Lars; and Norde, Herman, 4,554,569, Cl. 357-15.000.
Nordson Corporation: *See*—
Rehman, William R.; and Smith, James C., 4,553,701, Cl. 239-432.000.
North Carolina State University: *See*—
Chang, Hou-min; Joyce, Thomas W.; Kirk, Thomas K.; and Huynh, Van-Ba, 4,554,075, Cl. 210-611.000.
Norton Christensen, Inc.: *See*—
Jurgens, Rainer; and Jung, Thomas, 4,553,614, Cl. 175-302.000.
Radford, Steven R., 4,553,613, Cl. 175-250.000.
Nothen, Michael; and Bartsch, Erhard, to Webasto-Werk W. Baier GmbH & Co. System for supplying motor vehicle diesel engines with fuel. 4,553,697, Cl. 237-12.30B.
Nowak, Daniel. Pocket structure. 4,553,269, Cl. 2-254.000.
Nozawa, Ryoichiro; Kawamura, Hideaki; and Sasaki, Takao, to Fanuc Ltd. Acceleration/deceleration circuit. 4,554,497, Cl. 318-636.000.
Nu-Tec Incorporated: *See*—
Albertsen, Peter S., 4,553,527, Cl. 126-58.000.
Nunokawa, Atsushi: *See*—
Tsurumaru, Michiko; Nakazato, Seiichi; Nunokawa, Atsushi; Ueno, Hiroshi; and Kobayashi, Seishichi, 4,553,682, Cl. 220-75.000.
Nunose, Akira: *See*—
Shiga, Akinobu; Sasaki, Toshio; Kojima, Junpei; and Nunose, Akira, 4,554,264, Cl. 502-112.000.
Nurmi, Uuno: *See*—
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Nuttall, Michael: *See*—
Weiland, Herbert; Nuttall, Michael; and Kozuka, Michihiro, 4,553,947, Cl. 446-443.000.
Nygaard, Richard A., Jr.; and Palmer, Fredrick J., to Hewlett-Packard Company. Method and apparatus for determining if a digital value lies within a range. 4,554,632, Cl. 364-200.000.
O'Brien, William D., Jr.: *See*—
Huggins, Ronald G.; O'Brien, William D., Jr.; and Partus, Fred P., 4,554,078, Cl. 210-749.000.
Occidental Research Corporation: *See*—
Ore', Fernando, 4,554,144, Cl. 423-321.00R.
Oda, Eisuke: *See*—
Fujimura, Syunichi; Oda, Eisuke; Hagiwara, Miyuki; and Morita, Yosuke, 4,554,173, Cl. 427-120.000.
O'Dean, Raymond D.: *See*—
Gilder, Thomas G., Jr.; and O'Dean, Raymond D., 4,554,404, Cl. 174-52.0FP.
Odham, Carl J., to Stedman Corporation. Flat bed knitting machine having high speed secondary stitch attachment. 4,553,412, Cl. 66-207.000.
Ogino, Isao: *See*—
Nakamura, Osamu; Ogino, Isao; and Adachi, Masakazu, 4,554,224, Cl. 429-30.000.
O'Halloran, Michael L., to Hesston Corporation. Adjustable hold down for the sickle of a reciprocating cutter assembly. 4,553,380, Cl. 56-305.000.
Ohba, Masahiro: *See*—
Kuraoka, Hiroaki; Mizuno, Toshinori; Matsui, Katsumasa; and Ohba, Masahiro, 4,553,427, Cl. 73-117.300.
Ohgi, Tadaaki: *See*—
Sempuku, Kenji; Shibata, Yoshihisa; and Ohgi, Tadaaki, 4,554,275, Cl. 514-245.000.
Ohio State University Research Foundation, The: *See*—
Hink, Walter F., Jr., 4,554,251, Cl. 435-240.000.
Ohiwa, Kenichi: *See*—
Wachi, Sadayuki; Ohiwa, Kenichi; Shimada, Yasuo; and Hino, Takao, 4,553,931, Cl. 432-246.000.
Ohkubo, Masahiro, to Kabushiki Kaisha Daikin Seisakusho. Power change-over mechanism of a vehicle for industrial machinery. 4,553,623, Cl. 180-247.000.
Ohno, Shigeru; Kishimoto, Shinzo; and Yagihara, Morio, to Fuji Photo Film Co., Ltd. Method for processing color photographic light-sensitive material. 4,554,242, Cl. 430-393.000.
Oho, Shigeru; Hamano, Fumio; and Hirayama, Takeshi, to Hitachi, Ltd. Information transmitting apparatus. 4,554,461, Cl. 307-40.000.
Ohta, Hideo: *See*—
Yamashita, Kiyotoshi; Ishikawa, Minoru; Ohta, Hideo; and Kumashiro, Kenji, 4,554,247, Cl. 430-622.000.
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Kato, Kiichi, 4,554,654, Cl. 369-54.000.
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Verbicky, John W., Jr.; and O'Neil, Elbridge A., Jr., 4,554,357, Cl. 548-461.000.
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Ono, Nobuhiro; and Miwa, Eiji, to INAX Corporation. Fiber reinforced resin molded articles for electromagnetic waves and method for production thereof. 4,554,204, Cl. 428-246.000.
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Opresko, Stephen T., to RCA Corporation. Cathode-ray tube having a low power cathode assembly. 4,554,479, Cl. 313-417.000.

Ore', Fernando, to Occidental Research Corporation. Removal of magnesium and/or aluminum values from impure aqueous phosphoric acid. 4,554,144, Cl. 423-321.00R.
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Fachini, Robert M.; and Orsborn, Jesse H., 4,553,378, Cl. 56-16.600.
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Grossi, Anthony V.; Hahn, Louis T.; and Marzocchi, Alfred, 4,554,022, Cl. 106-273.00N.
Janicki, Richard T., 4,554,023, Cl. 106-273.00N.
Legg, Wesley E.; Ault, Russell L.; Mott, Richard A.; and Leewood, Alan R., 4,553,364, Cl. 52-309.130.
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Francel, Josef, 4,554,258, Cl. 501-21.000.
Gullikson, Ralph G., 4,553,666, Cl. 206-44.00R.
Pacini, Dino J.; Miceli, Edward C.; and Sturdevant, Norman J., Jr., to United States of America, Air Force. Low voltage two wire to four wire telephone circuit converter apparatus. 4,554,416, Cl. 179-170.0NC.
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Nygaard, Richard A., Jr.; and Palmer, Fredrick J., 4,554,632, Cl. 364-200.000.
Palmieri, John. Easy fingers. 4,553,466, Cl. 84-317.000.
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Zajeski, Robert B., 4,553,801, Cl. 339-59.00M.
Panza, Michael J., to United McGill Corporation. Sound absorption method and apparatus. 4,553,631, Cl. 181-291.000.
Panzner, Frank; and Evans, Brian R., to Hop Developments Limited. Extraction of plant material by using carbon dioxide. 4,554,170, Cl. 426-651.000.
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Paradis, Joseph R. Tamper resistant closures. 4,553,683, Cl. 220-266.000.
Paradis, Robert C., to Fiat Products Incorporated. Sectional modular shower cabinets and method and apparatus for making and installing them. 4,553,276, Cl. 4-612.000.
Park, Chung P., to Dow Chemical Company, The. Lightly crosslinked linear olefinic polymer foam blends and process for making. 4,554,293, Cl. 521-81.000.
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Parker, Donald L.: *See—*
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Parker, Merle A.; Rice, George F.; and Patrick, Stanley S., to Westinghouse Electric Corp. Nuclear fuel rod end plug weld inspection. 4,554,128, Cl. 376-252.000.
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Parker, Richard L.; Swords, Richard J.; and Griffin, Larry E., 4,553,698, Cl. 239-3.000.
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Parks, Kevin B.; Jordan, David D.; and Taig, Alistair G., to Allied Corporation. Universal joint with clearance elimination elements. 4,553,949, Cl. 464-153.000.
Parniere, Alain; and Bazenant, Dominique, to Thomson-CSF. Device for the automatic linearization of the control signal-frequency characteristic of a frequency-modulated variable frequency oscillator. 4,554,517, Cl. 332-18.000.
Parnkopf, Fiske O.: *See—*
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Parry, David: *See—*
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Pas, Ireneus J. T. M.: *See—*
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Pascal, Roger: *See—*
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Pavone, Robert J., to Gerber Scientific Instrument Company, The. Non-slip pulley and belt drive. 4,553,951, Cl. 474-148.000.
Payne, George B.; Soloway, Samuel B.; Powell, James E.; Roman, Steven A.; and Kollmeyer, Willy D., to Shell Oil Company. Certain substituted, 7-oxabicyclo[2.2.1]heptan-2-ols and -2-ones as intermediates. 4,554,366, Cl. 549-463.000.
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Pool, Daniel L., 4,553,710, Cl. 242-55.200.
Peascoe, Warren J.: *See—*
Hunter, Byron A.; Rowland, Donald G.; and Peascoe, Warren J., 4,554,294, Cl. 521-93.000.
Peinado, Charles O.; and Koutz, Stanley L., to United States of America, Energy. Gas-cooled nuclear reactor. 4,554,129, Cl. 376-298.000.
Pelc, Norbert J.: *See—*
Glover, Gary H.; DallaPiazza, Dennis G.; and Pelc, Norbert J., 4,554,633, Cl. 364-414.000.
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Pepper, Kenneth V., to Bemis Manufacturing Company. Rainwater gutter sealing arrangement. 4,553,356, Cl. 52-11.000.
Pepper, Kenneth V., to Bemis Manufacturing Company. Adjustable rainwater gutter mounting arrangement. 4,553,357, Cl. 52-12.000.
Pepper, Mark A.: *See—*
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PepsiCo Inc.: *See—*
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Periana-Pillai, Roy A.: *See—*
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Perkins, Kenneth L.: *See—*
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Perri, Joseph A.: *See—*
LaBate, Michael D., II; and Perri, Joseph A., 4,553,743, Cl. 266-272.000.
Personal Products Company: *See—*
Dabi, Shmuel, 4,554,297, Cl. 521-178.000.
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Pet Incorporated: *See—*
Wagner, Dennis L.; and Wells, Harold D., 4,554,437, Cl. 219-388.000.
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Peterson, John F. D.: *See—*
Wingard, Michael G.; and Peterson, John F. D., 4,554,079, Cl. 210-776.000.
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Durand, William W.; Jain, Anil K.; and Peterson, Ronald E., 4,553,816, Cl. 350-166.000.
Petersson, Rolf, to Flakt Aktiebolag. Sealing device in a cylinder drier. 4,553,340, Cl. 34-114.000.
Petke, Frederick D.; Ramsey, Charles W.; and McConnell, Richard L., to Eastman Kodak Company. Copolyester compositions. 4,554,303, Cl. 524-277.000.
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Naiman, Michael I.; and Schield, John A., 4,553,980, Cl. 44-62.000.
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Petrozello, James R.: *See—*
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Peyronel, Jean-Francois: *See—*
Le Roy, Pierre; Farge, Daniel; Moutonnier, Claude; Peyronel, Jean-Francois; and Plau, Bernard, 4,554,350, Cl. 544-22.000.
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LaMattina, John L., 4,554,276, Cl. 514-272.000.
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Pfleger, Albert; and Klesel, Peter, to Bayerische Motoren Werke Aktiengesellschaft. Cooling arrangement for internal combustion engines with combined seawater-fresh water cooling. 4,553,585, Cl. 165-41.000.
Pflueger, Richard: *See—*
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McHenry, Robert J.; Pfutzenreuter, Henry, III; Tung, Thomas T.; and Vella, John, Jr., 4,554,190, Cl. 428-35.000.
Pham van Cang, Luc, to Thomson-CSF. Device and apparatus for testing electronic equipment and particularly television equipment. 4,554,663, Cl. 371-20.000.
Phelps, Mary E.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Lee, Seok H.; and Phelps, Mary E., 4,554,106, Cl. 260-397.200.
Philip Morris Incorporated: *See—*
Lephardt, John O., 4,553,556, Cl. 131-336.000.
Phillips, Edward H., to Hidden Valley Associates. Apparatus for pumping subterranean fluids. 4,553,590, Cl. 166-53.000.
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Cheng, Paul J., 4,554,149, Cl. 423-450.000.
Dahlgren, Robert W.; and Dennis, William H., 4,553,985, Cl. 55-67.000.
Geissler, Bernhard H., 4,553,588, Cl. 165-162.000.
Goins, Robert R., 4,553,849, Cl. 366-134.000.
Kimble, Kenneth B.; Mark, Harold W.; and Bresson, Clarence R., 4,554,068, Cl. 209-167.000.
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Rooney, Patrick, 4,554,055, Cl. 203-89.000.
Shaw, James E., 4,553,593, Cl. 166-270.000.
Photoron Incorporated: *See—*
Mitsui, Kenji; and Suzuki, Akira, 4,554,409, Cl. 178-19.000.
Piccoli, Dante E.; and Nadkarni, Pradeep D., to Goodyear Tire & Rubber Company, The. Shape restoring hose. 4,553,568, Cl. 138-125.000.
Pieczykolan, George S. Automatic on-off sprinkler head. 4,553,602, Cl. 169-19.000.
Pierce, S. Mark: *See—*
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Pierce, William C., to Lear Siegler, Inc. Load equalizer valve and suspension system. 4,553,773, Cl. 280-676.000.
Pieters, Wim J. M.; and Okumura, Yoshiharu, to Exxon Research & Engineering Co. Two stage process for improving the catalyst life of zeolites in the synthesis of lower olefins from alcohols and their ether derivatives. 4,554,260, Cl. 502-61.000.
Pietrasanta, Yves: *See—*
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Pilgram, Kurt H.; and Skiles, Richard D., to Shell Oil Company. Aphicidal 3-(2-alkyl-2,3-dihydrobenzofuran-7-yl)-5-(R,R^1-amino)-1,3,4-oxadiazol-2(3H)-ones. 4,554,283, Cl. 514-364.000.
Pillis, Joseph W., to Frick Company. Method of coding the oil in screw compressors equipped with automatic variable volume ratio. 4,553,911, Cl. 418-1.000.
Pilot Ink Co., Ltd.: *See—*
Kito, Tutomu; Nakasuji, Norikazu; Kataoka, Takashi; Inagaki, Hiroshi; and Shibahashi, Yutaka, 4,554,565, Cl. 346-201.000.
Pinede, Edouard; Faublas, Serge; and Stevens, Peter F., to PKS/Communications, Inc. Key telephone system. 4,554,413, Cl. 179-99.00M.
Pinson, George T., to Boeing Company, The. Naval harrassment missile. 4,553,718, Cl. 244-3.150.
Pioneer Electronic Corporation: *See—*
Ando, Tomiaki, 4,553,630, Cl. 181-144.000.
Kanai, Mikio; Hatano, Hideki; Tajiri, Norikiyo; Otaki, Sakashi; and Kato, Sigeru, 4,554,651, Cl. 369-13.000.
Moriyama, Yoshiaki; and Yamagata, Kenji, 4,554,529, Cl. 340-347.0DD.
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Pissiotas, Georg: *See—*
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Pittet, Gilbert H.: *See—*
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Planmobel Eggersmann GmbH & Co. KG: *See—*
Votteler, Arno; Lanuzzi, Max; Dubach, Fredi; and Schreiner, Herbert, 4,553,483, Cl. 108-4.000.
Plau, Bernard: *See—*
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Plummer, Jeffrey J.; and Adleman, Larry G., to Ex-Cell-O Corporation. Cable pulling device with anti-reversing clutch. 4,553,738, Cl. 254-358.000.
Plunkett, Larry E., to MSL Industries, Inc. Brushless DC motor having a laminated stator with a single stator winding. 4,554,491, Cl. 318-254.000.
Pluschow, Dieter: *See—*
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Poate, John M.: *See—*
Bean, John C.; Chiu, Kin-Chung R.; and Poate, John M., 4,554,045, Cl. 156-613.000.
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Polaris Home Systems, Inc.: *See—*
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Polaroid Corporation: *See—*
Kee, Richard C., 4,554,591, Cl. 358-256.000.
Polydrain, Inc.: *See—*
Thomann, Roland; and Amann, Markus, 4,553,874, Cl. 404-4.000.
Pommer, Ernst-Heinrich: *See—*
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Ponce, Felix C. Latch face template for a portable router. 4,553,336, Cl. 33-197.000.
Ponpipom, Mitree M.; Shen, Tsung-Ying; and Bugianesi, Robert L., to Merck & Co., Inc. Aralkyl and aralkenyl glycosides as inhibitors of antigen-specific T-cell proliferation. 4,554,349, Cl. 536-55.000.
Ponzoni, Ronald W.: *See—*
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Pool, Daniel L., to PC Manufacturing Corporation. Roll holding fixture. 4,553,710, Cl. 242-55.200.
Poole, Joseph J.: *See—*
King, Charles S.; and Poole, Joseph J., 4,553,515, Cl. 123-308.000.
Pope, Bryan M.; and Hawkins, Richard. Oral orthopedic/orthodontic appliance for treating neuromuscular imbalance. 4,553,549, Cl. 128-421.000.
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Potter, Robert S. Convertible restaurant seating. 4,553,359, Cl. 52-173.00R.
Poulard, Serge: *See—*
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Powell, Bert R.; and Collins, Albert L., to Texas Processed Plastics, Inc. Plant container for draining moisture from the soil. 4,553,352, Cl. 47-71.000.
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Powell, Lee: *See—*
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PPG Industries, Inc.: *See—*
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Pradier, Serge; and de Marchi, Jean-Louis, to Etablissements Francois Salomon et Fils. Rapid attachment device for ski boots. 4,553,292, Cl. 24-70.0SK.
Preiner, Gerhard: *See—*
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Prescott, G. Robert: *See—*
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Pressaco, Pierre: *See—*
Carre , Jean-Jacques; and Pressaco, Pierre, 4,553,646, Cl. 188-196.0BA.
Pressure Science Incorporated: *See—*
Halling, Horace P., 4,553,775, Cl. 285-55.000.
Price, Anthony G.; and Parry, David, to Lucas Industries public limited company. Master cylinder assembly for a vehicle braking system. 4,553,395, Cl. 60-562.000.

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Marcus, Konrad H., 4,553,797, Cl. 339-22.000.
Process Shizai Co., Ltd.: *See*—
Kashiwagi, Takashi, 4,554,239, Cl. 430-270.000.
Prodeco, Inc.: *See*—
Worthington, Ralph E.; and Magdics, Alex, 4,554,139, Cl. 423-166.000.
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Promoli, Johann-Christian: *See*—
Bock, Erich; Lovas, Kurt; Promoli, Johann-Christian; and Dammig, Joachim, 4,553,709, Cl. 242-47.010.
Propst, Verle V.: *See*—
Winter, Rudolph R.; and Propst, Verle V., 4,553,313, Cl. 29-568.000.
Provost, Lawrence A.; and Boyer, Robert D., to Sealed Power Corporation. Ring compressor tool. 4,553,421, Cl. 72-402.000.
Pryor, David J.: *See*—
Spratt, Brendan J.; Pryor, David J.; Jones, James B., Jr.; Davis, Dennis W.; and Frazier, Richard V., Jr., 4,554,547, Cl. 343-7.300.
PTX-Pentronix, Inc.: *See*—
DeSantis, Raymond P., 4,553,375, Cl. 53-475.000.
Puggioli, Roberto: *See*—
Borrman, Bo; and Puggioli, Roberto, 4,553,764, Cl. 277-226.000.
Pugh, James G.; and Carmichael, Richard W., to Allied Corporation. Dual brake valve with brake proportioning. 4,553,789, Cl. 303-54.000.
Pullen, Roger J., to Schlumberger Electronics (U.K.) Limited. Cable outlet adaptors. 4,554,408, Cl. 174-135.000.
Pullman Standard Inc.: *See*—
Yates, Donald B., 4,553,642, Cl. 188-56.000.
Purdy, William C.: *See*—
McClintock, Sam A.; and Purdy, William C., 4,554,064, Cl. 204-411.000.
Pursley, David A. Rotator cuff machine. 4,553,747, Cl. 272-118.000.
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Takao, Masayasu, 4,554,107, Cl. 260-421.000.
Quaker Oats Company, The: *See*—
Robjent, Frederick B.; and Klamer, Reuben B., 4,553,767, Cl. 280-11.210.
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Morando, E. Donald, 4,553,691, Cl. 229-2.5EC.
Quest Medical, Inc.: *See*—
LeCocq, Andrew D., 4,553,958, Cl. 604-67.000.
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Nafziger, John L.; Rader, Laura A.; and Seward, Irwin J., Jr., 4,554,378, Cl. 564-332.000.
Radford, Steven R., to Norton Christensen, Inc. Hydraulic lift inner barrel in a drill string coring tool. 4,553,613, Cl. 175-250.000.
Radus, Raymond J., to Westinghouse Electric Corp. Secondary circuit breaker for distribution transformer with indicator light switch mechanism. 4,554,524, Cl. 337-3.000.
Rafelson, Stephen. Endoscopic pillow covering with high absorbency characteristics. 4,553,538, Cl. 128-132.00D.
Rafert, Don L. Wrench-holding fixture for vehicular wheels. 4,553,456, Cl. 81-462.000.
Rafipour, Bijan J., to Mobil Oil Corporation. Method for measuring seismic phase shift of compressional waveforms. 4,554,647, Cl. 367-48.000.
Raisin, Helmut; and Teutelink, Bernard C., to Ciba-Geigy Corporation. Process for dyeing or printing polyamide fibres. 4,553,976, Cl. 8-639.000.
Rajbenbach, Arie L.: *See*—
Behar, David; Rajbenbach, Arie L.; Juszynski, Marta; and Ben-Hur, Nahum, 4,554,317, Cl. 525-28.000.
Raloff, Valgene E., to Dover Corporation. Components for gas metal arc welding gun. 4,554,432, Cl. 219-137.430.
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Ramamurthy, Arakalgud V., to Union Carbide Corporation. Process for eliminating surface melt fracture during extrusion of thermoplastic polymers. 4,554,120, Cl. 264-85.000.
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Ramuz, Henri: *See*—
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Ranken, Paul F., to Ethyl Corporation. Preparation of 1-alkyl-1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylic acid. 4,554,352, Cl. 546-156.000.
Rannenberg, George C., to United Technologies Corporation. High efficiency air cycle air conditioning system. 4,553,407, Cl. 62-402.000.
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Ratcliff, Henry K. Drive circuit for a plurality of ultrasonic generators using auto follow and frequency sweep. 4,554,477, Cl. 310-316.000.
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Ray, William C., to Allis-Chalmers Corporation. Hose tensioning device. 4,553,638, Cl. 187-9.00E.
Raychem Corporation: *See*—
Holt, Neil L., 4,553,809, Cl. 339-275.00T.
Raytheon Company: *See*—
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RCA Corporation: *See*—
Altman, Wolf P., 4,554,666, Cl. 372-19.000.
Carlson, Curtis R., 4,554,585, Cl. 358-209.000.
Chandrasekhar, Hosekere S., 4,553,318, Cl. 29-577.00C.
Faulkner, Richard D.; and Rhoads, James L., 4,554,481, Cl. 313-533.000.
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Opresko, Stephen T., 4,554,479, Cl. 313-417.000.
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Schlack, Richard E., 4,554,480, Cl. 313-446.000.
Shanley, Robert L., II; Yost, Thomas D.; and Lagoni, William A., 4,554,577, Cl. 358-34.000.
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Willis, Donald H., 4,554,578, Cl. 358-65.000.
Wine, Charles M., 4,554,582, Cl. 358-149.000.
Read, Michael E.; Carmel, Yuval; Chu, Kwo R.; and Ganguly, Achintya K., to United States of America, Navy. Complex cavity gyrotron. 4,554,484, Cl. 315-4.000.
Red Owl Stores, Inc.: *See*—
Bloomquist, Dayton E., 4,553,584, Cl. 165-30.000.
Reddington, Thomas B., to AT&T Bell Laboratories. Keyword search automatic limiting method. 4,554,631, Cl. 364-300.000.
Redien, Jean-Paul, to Schuco Heinz Schurmann GmbH & Co. Frame for a door or window with at least one brace manufactured from hollow, preferably heat-insulated composite sections. 4,553,367, Cl. 52-656.000.
Reed, Alvin R.: *See*—
Alexander, Douglas E.; Holland, James F.; Leonard, Herbert G.; and Reed, Alvin R., 4,553,869, Cl. 400-568.000.
Reed, Lyle T.; and Olt, Arthur E., Jr., to Caterpillar Tractor Co. Flexible seal for a spherical joint. 4,553,760, Cl. 277-12.000.
Reeve, William E., to Dixon International Limited. Structural slide bearing. 4,553,792, Cl. 308-3.00R.
Reeves, Robert L., to St. Regis Corporation. Dunnage bag. 4,553,887, Cl. 410-119.000.
Rehman, William R.; and Smith, James C., to Nordson Corporation. Foam generating nozzle. 4,553,701, Cl. 239-432.000.
Reichmann, Wolfgang: *See*—
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Reilly, David M.: *See*—
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Reim, Werner; and Pluschow, Dieter, to IWK Verpackungstechnik GmbH. Insertion apparatus. 4,553,659, Cl. 198-372.000.
Reimann, Horst; Ziegler, Walter; Brandstetter, Franz; Theysohn, Rainer; and Pflueger, Richard, to BASF Aktiengesellschaft. Nylon molding materials having high impact strength. 4,554,320, Cl. 525-183.000.
Reinalda, Donald: *See*—
Neel, Emmanuel E. A.; Levavasseur, Jacques A.; and Reinalda, Donald, 4,554,268, Cl. 502-439.000.
Reinecke, Paul S.: *See*—
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Reinhardt, Peter, to Mannesmann Rexroth GmbH. Control device for a hydraulic cylinder for maintaining the pulling force thereof constant. 4,553,391, Cl. 60-413.000.
Reith, Walter: *See*—
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Releasomers, Inc.: *See*—
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Reliance Electric Company: *See*—
Dillon, Philip L., 4,554,504, Cl. 323-356.000.
Woyton, Joseph T., 4,553,335, Cl. 33-181.00R.
Renga, James M.; Periana-Pillai, Roy A.; and Frazier, Kevin A., to Dow Chemical Company, The. Preparation of carbamates. 4,554,372, Cl. 560-161.000.
REPA Feinstanzwerk GmbH: *See*—
Honl, Wolf-Dieter, 4,553,716, Cl. 242-107.700.

Research Institute For Medicine and Chemistry Inc.: *See*—
Hesse, Robert H., 4,554,105, Cl. 260-397.200.
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Beaudet, William R.; Pepper, Mark A.; and Rester, David H., 4,554,558, Cl. 346-75.000.
Retech AG: *See*—
Brehm, Gustav, 4,553,382, Cl. 57-284.000.
Retzloff, James B.: *See*—
Hanlon, J. Vincent; Lenane, Denis L.; and Retzloff, James B., 4,553,979, Cl. 44-57.000.
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Cosenza, Frank J.; and Yamamoto, Albert K., 4,553,302, Cl. 29-240.500.
Yamamoto, Albert K., 4,553,303, Cl. 29-240.500.
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Rhone-Poulenc Specialites Chimiques: *See*—
Desbois, Michel, 4,554,381, Cl. 568-34.000.
Ricci, Vero. Shot gun shell tracer wad. 4,553,481, Cl. 102-458.000.
Rice, George F.: *See*—
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Rice, Trudie C.: *See*—
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Richardson, Kenneth; and Whittle, Peter J., to Pfizer Inc. Antifungal 1-triazolyl-2-aryl-3-(5-trifluoromethylimidazol-1-yl)propan-2-ol derivatives. 4,554,286, Cl. 514-383.000.
Richartz, Adolf: *See*—
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Richelli, Angelo; and Battistella, Guido. Device for storing and automatic drawing of so-called intermediate elements, for loading, feeding and discharge of certain products, from a freezer to horizontal plates. 4,553,406, Cl. 62-341.000.
Ricoh Company, Ltd.: *See*—
Aruga, Tamotsu; Fujii, Tadashi; Murakami, Kakuji; and Akutsu, Eiichi, 4,554,555, Cl. 346-1.100.
Hashimoto, Mitsuru; Kawabata, Toshiyasu; Nanya, Toshiki; and Murayama, Hisao, 4,554,233, Cl. 430-106.600.
Hirata, Shinichi; and Isayama, Takuro, 4,554,556, Cl. 346-49.000.
Mayer, Edward F., 4,553,827, Cl. 355-3.0DD.
Ridge, Charles A., Jr., to Eastern Foam Products, Inc. Method for preparing flexible polyurethane foams from polymer/polyols and improved polyurethane foam product. 4,554,295, Cl. 521-110.000.
Riegger, Wolfgang: *See*—
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Rigo, Giuseppe. Apparatus for generating a controllable steam and ozone mixture and hair-dryer for uniformly distributing said mixture on hair. 4,553,339, Cl. 34-99.000.
Riley, Victor, to Imperial Oil Limited. Prefabricated building units. 4,553,362, Cl. 52-236.300.
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Muschelknautz, Edgar; Rink, Norbert; and Chalupka, Georg, 4,553,996, Cl. 65-4.400.
Risse, Jean-Claude: *See*—
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Ritchie, Robert J., to Du Pont de Nemours, E. I., and Company. Anodic electrodeposition of charged aqueous powder slurry. 4,554,061, Cl. 204-181.600.
Ritzer, Alan: *See*—
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Rizzon, John; Adomat, Gunter; and Diemer, Peter, to Krupp-Koppers GmbH. Method and device for removal of heavy tar from a coke-oven gas during cooling. 4,554,053, Cl. 201-21.000.
Robbart, Edward. Coating of cellulosic base stocks and the product thereof. 4,554,215, Cl. 428-447.000.
Robbins, Clarence R.: *See*—
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Roberts, Harold D. Tool for forming a recess for a dental implant. 4,553,939, Cl. 433-144.000.
Roberts, John W.: *See*—
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Roberts, Manuel E.; and Ketchum, Thomas W. Tree stand. 4,553,634, Cl. 182-134.000.
RobertShaw Controls Company: *See*—
McIntosh, Harold A., 4,554,616, Cl. 361-424.000.
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Robjent, Frederick B.; and Klamer, Reuben B., to Quaker Oats Company, The. Roller skate with integral ratchet means. 4,553,767, Cl. 280-11.210.
Rochester Gauges, Inc.: *See*—
Howeth, James R., 4,554,494, Cl. 318-482.000.
Rockland, Inc.: *See*—
Tyer, Robert C., 4,553,778, Cl. 294-86.400.
Rockwell International Corporation: *See*—
Graves, Steven P., 4,554,539, Cl. 340-805.000.
Zachry, Clyde L., 4,554,505, Cl. 324-158.00F.
Roder GmbH, Sitzmobelwerke: *See*—
Korn, Heinrich, 4,553,449, Cl. 74-501.00R.
Roderburg, Harald, to Gesellschaft mit beschrankter Haftung Kabelmetal Electro. Method for the color coding of optical fibers. 4,554,179, Cl. 427-163.000.
Roentgen, Paul; Krumm, Helmut; Lenzen, Gunter; and Schilde, Heinz, to Saint-Gobain Vitrage. Inner lamina, and process for manufacture, for vehicle windshield. 4,554,199, Cl. 428-194.000.
Rogers, John R.: *See*—
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Rohatyn, Frederick. Power factor correction system. 4,554,502, Cl. 323-208.000.
Rohm and Haas Company: *See*—
Coyle, Robert W., 4,554,054, Cl. 203-15.000.
Roizman, Bernard; and Lang, M. Robert, to Institute Merieux. Vaccine and method of immunizing against herpes simplex virus (types 1 and 2). 4,554,159, Cl. 424-89.000.
Roman, Steven A.: *See*—
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Rooney, Patrick, to Phillips Petroleum Company. Solvent recovery. 4,554,055, Cl. 203-89.000.
Ropers, Till. Tooth matrix band. 4,553,937, Cl. 433-39.000.
Roselli, Federico. Extendible line. 4,553,715, Cl. 242-100.000.
Rosen, Josh: *See*—
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Rosen, Murray: *See*—
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Rosende, Francisco J. B. Solar radiation collector. 4,553,531, Cl. 126-440.000.
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Rosicke, Bernd; and Rosenbladt, Rudolf V., to Boehringer Mannheim GmbH. Method of detecting and evaluating photometric signals and device for carrying out the method. 4,553,848, Cl. 356-448.000.
Rossfelder, Andre M.; and Jung, Peter A., to Geomarex. High frequency vibratory systems for earth boring. 4,553,443, Cl. 74-22.00R.
Rotpunkt Dr. Anso Zimmermann: *See*—
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Rubin, Gene L.; Filipowicz, Anthony H.; and Valenza, Frank. Multiframe apparatus. 4,553,344, Cl. 40-152.000.

Rubin, Harvey, to AT&T Bell Laboratories. Digital filtering with monitored settling time. 4,554,642, Cl. 364-724.000.

Rubin, Mae K., to Mobil Oil Corporation. Preparation of crystalline silicate zeolite Beta. 4,554,145, Cl. 423-328.000.

Ruble, Charles G. Barbeque grill assembly. 4,553,525, Cl. 126-30.000.

Rude, Harold E.: *See*—
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Rudich, George, Jr.; Beeson, Charles F.; Bartley, Gary L.; and Heckenbach, Terry A., to Johnson Service Company. Controllable rotary actuator. 4,554,496, Cl. 318-600.000.

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Ruehl, William E.; Heidorn, Richard H.; and Swick, Edwin G., to Illinois Tool Works Inc. Transient voltage protector. 4,554,609, Cl. 361-119.000.

Ruijten, Henri M.; De Bree, Hans; Van Amsterdam, Peter H.; and Wiegers, Elbert, to Duphar International Research B.V. Pre-column for preconcentrating substances to be chromatographed as well as device for a liquid chromatography system and coupling member for said device. 4,554,071, Cl. 210-198.200.

Rukavina, Thomas G., to PPG Industries, Inc. Cyanoethylacrylate/acrylic acid copolymer. 4,554,318, Cl. 525-118.000.

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Rumbaugh, Robert C.; and Miller, Ira, to Motorola, Inc. Latching comparator with hysteresis. 4,554,468, Cl. 307-355.000.

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Runge, Thomas M.: *See*—
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Ruseff, Walter Z.; and Schimpf, James E., to Caterpillar Tractor Co. Pump control with fluid responsive standby pressure. 4,553,904, Cl. 417-218.000.

Russell, James D., to Simonsen Laboratories, Inc. Modified live sendai virus vaccine for administering through an aerosol and method of producing the same. 4,554,158, Cl. 424-89.000.

Russiello, Andrea, to Wilmington Chemical Corporation. Crosslinked polyurethane dispersions. 4,554,308, Cl. 524-591.000.

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S.A.R.L. Aspiramatic: *See*—
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Sachs, Kerry M.; and Roberts, David W. Plug furnace. 4,553,285, Cl. 110-223.000.

Sadler, Karl-Otto; and Schmidt, Willy, to Blohm & Voss AG. Warship with standardized operating units. 4,553,493, Cl. 114-1.000.

Safe-T-Jack, Inc.: *See*—
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Saggiomo, Andrew J.; and Nodiff, Edward A., to United States of America, Army. 5-(Straight chain 3-12 carbon alkoxy)-8-quinolinamines and their use for treatment of malaria. 4,554,279, Cl. 514-311.000.

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St-Amand, Maurice. Stop cock manifold holder. 4,553,724, Cl. 248-68.100.

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Saunders, G. Thomas, 4,553,475, Cl. 98-36.000.

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Roentgen, Paul; Krumm, Helmut; Lenzen, Gunter; and Schilde, Heinz, 4,554,199, Cl. 428-194.000.

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Dougherty, Delford O., 4,553,686, Cl. 222-212.000.

St. Regis Corporation: *See*—
Reeves, Robert L., 4,553,887, Cl. 410-119.000.

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Hayakawa, Shoichi; and Saito, Muneo, 4,553,511, Cl. 123-179.00B.

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Shimizu, Shoji; Asakawa, Shirow; Saito, Yukihiro; and Ito, Yoshimasa, 4,553,988, Cl. 55-158.000.

Saitoh, Hiroyuki; and Kurata, Masami, to Fuji Xerox Co., Ltd. Shading correction device. 4,554,583, Cl. 358-163.000.

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Kimoto, Toshifumi; Todoh, Hidemasa; Itami, Teruhiko; and Saitoh, Koichi, 4,554,557, Cl. 346-74.400.

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Komiya, Hidetsugu; Inoue, Michiya; and Saitoh, Yoshiyuki, 4,554,462, Cl. 307-140.000.

Sakagami, Teruo; Arakawa, Noriyuki; Teramoto, Yoshikichi; and Nakamura, Kenichi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Dielectric polymer materials. 4,554,335, Cl. 526-249.000.

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Hattori, Katsuhide; Fukatsu, Yoshiaki; and Sakai, Hiroshi, 4,554,032, Cl. 149-21.000.

Sakai, Kiyoshi: *See*—
Ishikawa, Shozo; Sakai, Kiyoshi; Mabuchi, Minoru; Watanabe, Katsunori; and Kitahara, Makoto, 4,554,231, Cl. 430-59.000.

Sakai, Shinji; Kawabata, Takashi; and Harada, Yoshihito, to Canon Kabushiki Kaisha. Apparatus for detecting the amount of movement of a member to be controlled. 4,554,674, Cl. 377-17.000.

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Uchino, Kenju; and Sakai, Tomoo, 4,553,329, Cl. 33-147.00T.

Sakaki, Hiroyuki; Tanoue, Tomonori; and Nojiri, Hidetoshi, to Canon Kabushiki Kaisha; and Sakaki, Hiroyuki. Method of obtaining an impact ionization coefficient rate by junction of different kinds of semiconductors. 4,553,317, Cl. 29-572.000.

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Sakakibara, Toshimitsu: *See*—
Takawashi, Tamio; Sakakibara, Toshimitsu; and Yamada, Shigeo, 4,554,428, Cl. 219-69.00G.

Sakano, Hajime; Ito, Akitoshi; Yano, Motoichi; Honda, Yasuhiro; and Fujiwara, Takayoshi, to Sumitomo Naugatuck Co., Ltd. Thermoplastic resin composition. 4,554,316, Cl. 525-71.000.

Sakata, Yasuo: *See*—
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Sakurai, Shigenori; Kamo, Takashi; and Kimura, Shirou, to Toyota Jidosha Kabushiki Kaisha. Method for detecting an oxygen concentration and a method for controlling an air-to-fuel ratio based on the detected oxygen concentration. 4,553,424, Cl. 73-27.00R.

Salaam, Ameen. Centering apparatus and method. 4,553,331, Cl. 33-172.00D.

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Salomon S.A.: *See*—
Boussemart, Jean-Pierre; Bressand, Rene; and Pascal, Roger, 4,553,772, Cl. 280-628.000.

Salva, Henri E., to J. I. Case Company. Gang plow of varible working width. 4,553,609, Cl. 172-647.000.

Salvador, Linda M.: *See*—
Zimmer, James E.; and Salvador, Linda M., 4,554,024, Cl. 106-284.000.

Salvagnini, Guido, to Salvagnini Transferica S.p.A. Selection system for flat articles, particularly metal sheets of different sizes coming from a shearing machine. 4,553,672, Cl. 209-615.000.

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Salvagnini, Guido, 4,553,672, Cl. 209-615.000.

Samaras, Byron: *See*—
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Sambucetti, Carlos J.: *See*—
Bupp, James R.; Lemon, Gary K.; Markovich, Voya; Sambucetti, Carlos J.; Tisdale, Stephen L.; and Trevitt, Donna J., 4,554,182, Cl. 427-304.000.

Sanden Corporation: *See*—
Nakamura, Yasuo, 4,553,690, Cl. 29-159.00R.

Sanderson, John R.; Yeakey, Ernest L.; and Lin, Jiang-Jen, to Texaco Inc. Production of 2-hydroxyalkyl-1,3-dioxolanes. 4,554,364, Cl. 549-453.000.

Sandoz Ltd.: *See*—
Wenger, Roland, 4,554,351, Cl. 544-177.000.

Sands, Robert E.: *See*—
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Sano, Shoichi: *See*—
Furukawa, Yoshimi; Sano, Shoichi; Takamatsu, Hiroshi; and Sato, Makoto, 4,553,768, Cl. 280-91.000.

Sano, Susumu; Ikai, Katsushige; Kuroda, Hiroyuki; Nakamura, Teruya; Enomoto, Hiroshi; and Ezure, Yoji, to Takara Shuzo Co., Ltd.; and Nippon Shinyaku Co., Ltd. Of4949. 4,554,289, Cl. 514-450.000.

Santrol Products, Inc.: *See*—
Graham, John W.; and Sinclair, A. Richard, 4,553,596, Cl. 166-295.000.

Sanwa Shoji Co., Ltd.: *See*—
Ishii, Katsuyoshi; Kobori, Michio; and Morimoto, Seiichi, 4,554,255, Cl. 436-102.000.

Sardain, Christian: *See*—
Galais, Michel; Sardain, Christian; Fouin, Jean; Arnaudeau, Marcel; and Morin, Pierre, 4,553,909, Cl. 417-369.000.

Sargent, Brian; and Skilling, James, to GenRad, Inc. Control apparatus for back-driving computer memory and forcing execution of idle loop program in external memory. 4,554,630, Cl. 364-200.000.

Saris, Frans W.: *See*—
Haisma, Jan; Larsen, Poul K.; De Jong, Tim; Van der Veen, Johannes F.; Douma, Willem A. S.; and Saris, Frans W., 4,554,030, Cl. 148-175.000.

Sasaki, Gen: *See*—
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Sasaki, Hideki, to Japan Medical Supply Co., Ltd. Infusion apparatus. 4,553,964, Cl. 604-248.000.
Sasaki, Mitsuru; and Ishiguri, Yukio, to Sumitomo Chemical Company, Limited. α-Hydroxyethylphosphinates, and their production and use. 4,554,111, Cl. 260-502.40R.
Sasaki, Takao: *See*—
Nozawa, Ryoichiro; Kawamura, Hideaki; and Sasaki, Takao, 4,554,497, Cl. 318-636.000.
Sasaki, Takashi: *See*—
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Sasaki, Tetsuo: *See*—
Takagaki, Tokujiro; Sasaki, Tetsuo; and Seike, Haruo, 4,554,227, Cl. 429-178.000.
Sasaki, Toshio: *See*—
Shiga, Akinobu; Sasaki, Toshio; Kojima, Junpei; and Nunose, Akira, 4,554,264, Cl. 502-112.000.
Sasano, Nakamichi, to Comnix Kabushiki Kaisha. Bilateral amplifier. 4,554,415, Cl. 179-170.00G.
Sasser, R. Garth; and Hamilton, William C., to Idaho Research Foundation, Inc., The. Antigen associated with early detection of mammalian pregnancy. 4,554,256, Cl. 436-510.000.
Sato, Hideaki: *See*—
Yoshikawa, Hiroshi; Hattori, Tetsuya; and Sato, Hideaki, 4,553,674, Cl. 211-26.000.
Sato, Hideo: *See*—
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Sato, Makoto: *See*—
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Satoo, Fumihide: *See*—
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Saunders, G. Thomas, to St. Charles Manufacturing Co. Laboratory hood attachment. 4,553,475, Cl. 98-36.000.
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Buschmann, Ernst; Zeeh, Bernd; Jung, Johann; and Sauter, Hubert, 4,554,006, Cl. 71-76.000.
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Looney, Mark D.; and Savage, Kerry D., 4,553,592, Cl. 166-248.000.
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Suomala, John E.; Bratton, Kenneth L.; Bergsten, Sten E.; Savic, Nicolas M.; and Gardner, E. Boyd, 4,554,000, Cl. 65-129.000.
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Saykowski, Franz: *See*—
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Schaffner, Arlene: *See*—
Lee, Valerie H., 4,553,746, Cl. 272-68.000.
Schaffner, Donald: *See*—
Lee, Valerie H., 4,553,746, Cl. 272-68.000.
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Schaumberg, John P.: *See*—
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Schebece, Frank; and Carson, John C., Jr., to Colgate-Palmolive Company. Elastic detergent product containing anionic and amphoteric synthetic organic detergents. 4,554,097, Cl. 252-542.000.
Schemmann, Hugo: *See*—
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Schenck, Robert R.; and Weinrib, Harry P. Methods and apparatus for joining anatomical structures. 4,553,542, Cl. 128-334.00R.
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Vorbrueggen, Helmut, 4,554,363, Cl. 549-415.000.
Schering Corporation: *See*—
Knapp, Julius Z., 4,554,125, Cl. 264-266.000.
Steinman, Martin; and Wong, Yee-Shing, 4,554,103, Cl. 260-239.00A.
Schield, John A.: *See*—
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Naiman, Michael I.; and Schield, John A., 4,554,327, Cl. 525-356.000.
Schiff, Leonard N., to RCA Corporation. Noise reduction system for a single sideband multiplex signal. 4,554,679, Cl. 455-303.000.
Schilde, Heinz: *See*—
Roentgen, Paul; Krumm, Helmut; Lenzen, Gunter; and Schilde, Heinz, 4,554,199, Cl. 428-194.000.
Schimpf, James E.: *See*—
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Schlack, Richard E., to RCA Corporation. Cathode-ray tube having an electron gun assembly with emissivity modifying means. 4,554,480, Cl. 313-446.000.
Schlak, Ottfried: *See*—
Grape, Wolfgang; Saykowski, Franz; Schlak, Ottfried; and Wurminghausen, Thomas, 4,554,187, Cl. 427-387.000.
Schlieder, Klaus: *See*—
Homann, Ernst; Nelboeck, Michael; Schlieder, Klaus; and Bayer, Gernold, 4,553,553, Cl. 128-749.000.
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Pullen, Roger J., 4,554,408, Cl. 174-135.000.
Schlumberger Technology Corporation: *See*—
Glotin, Bernard J., 4,553,599, Cl. 166-332.000.
Meek, Dale E.; and Upchurch, James M., 4,553,598, Cl. 166-317.000.
Upchurch, James M., 4,553,428, Cl. 73-152.000.
Schluter, Gert; and Zimmermann, Matthias, to Rhodia Aktiengesellschaft. Device for uptake, transportation, and recovery of cell material, and for transfer of the recovered material to microscope slides. 4,554,073, Cl. 210-450.000.
Schmalzl, Dieter, to Siemens Aktiengesellschaft. Radio-frequency-tight shielding with planar parts. 4,554,400, Cl. 174-35.0GC.
Schmid, Hartmut, to DSL Dynamic Sciences Limited. Rechargeable battery pack. 4,554,221, Cl. 429-1.000.
Schmidt, Donald L.; and Harris, Robert F., to Dow Chemical Company, The. Perfluorocarbon based polymeric coatings having low critical surface tensions. 4,554,325, Cl. 525-326.800.
Schmidt, Norman B.: *See*—
DeBold, Terry A.; Magee, John H., Jr.; and Schmidt, Norman B., 4,554,028, Cl. 148-38.000.
Schmidt, Willy: *See*—
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Schmitt, Karl: *See*—
Eckhardt, Erich; Schmitt, Karl; Grone, Wolfgang; and Binev, Binio, 4,553,620, Cl. 180-6.480.
Schmitt, Paul M.: *See*—
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Schmitz, Paul L.: *See*—
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Tautzenberger, Peter; Schneider, Friedrich; and Stoeckel, Dieter, 4,554,027, Cl. 148-11.50R.
Schneider, Manfred; Barth, Gerhard; Barth, Johannes; and Neubert, Wolfgang, to Veb Kombinat Textima. Card clothing for carding segments of a carding machine. 4,553,288, Cl. 19-113.000.
Schneider, Rudolf, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Rapid-stop torque-transmitting device. 4,553,653, Cl. 192-18.00B.
Schnetzka, Harold R.: *See*—
Norbeck, Dean K.; and Schnetzka, Harold R., 4,554,463, Cl. 307-252.00H.
Schnoes, Heinrich K.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Lee, Seok H.; and Phelps, Mary E., 4,554,106, Cl. 260-397.200.
Schoen, Jerry W.; and Young, Russel L., to Armco Inc. Local heat treatment of electrical steel. 4,554,029, Cl. 148-112.000.
Scholl, Herbert: *See*—
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Schoonover, John M., to Air Preheater Company, Inc., The. Method for manufacturing heat transfer element sheets for a rotary regenerative heat exchanger. 4,553,458, Cl. 83-33.000.
Schorman, Eric: *See*—
Smith, Paul F.; Schorman, Eric; Burke, Timothy M.; and Lynk, Charles N., Jr., 4,554,677, Cl. 455-54.000.
Schott Glass Technologies, Inc.: *See*—
Franklin, Brian; and Mader, Karl-Heinz, 4,554,259, Cl. 501-67.000.
Schreder, Felix, to E.G.O. Elektro-Gerate Blanc u. Fischer. Electric cooker with thermostats for protecting against localized overheating. 4,554,438, Cl. 219-449.000.
Schreiber, William L.: *See*—
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,554,384, Cl. 568-445.000.
Fujioka, Futoshi; Boden, Richard M.; and Schreiber, William L., 4,554,385, Cl. 568-496.000.
Schreier, Kurt; Bartsch, Karl; Knoll, Helmut; and Tomazic, Gerd, to Vereinigte Edelstahlwerke Aktiengesellschaft. Method of producing a thermally insulated body. 4,554,041, Cl. 156-276.000.
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Schroder, Rolf; and Lurssen, Klaus, to Bayer Aktiengesellschaft. Method and compositions for regulating plant growth using cycloalkane-carboxylic acid compounds. 4,554,017, Cl. 71-113.000.
Schubert & Salzer: *See*—
Bock, Erich; Lovas, Kurt; Promoli, Johann-Christian; and Dammig, Joachim, 4,553,709, Cl. 242-47.010.
Schuco Heinz Schurmann GmbH & Co: *See*—
Redien, Jean-Paul, 4,553,367, Cl. 52-656.000.
Schuler, Bernhard; and Beck, Ernst, to Theodor Groz & Sohne; and Ernst Beckert Nadelfabrik KG. Stamped knitting tool for knitting machines. 4,553,411, Cl. 66-123.000.

Schultz, Dale E., to Sperry Corporation. Static memory cell with dynamic scan test latch. 4,554,664, Cl. 371-25.000.

Schultz, Peter C.: *See—*
Chyung, Kenneth; Schultz, Peter C.; and Taylor, Mark P., 4,554,197, Cl. 428-113.000.

Schulz, Guenther; and Zuerger, Manfred, to BASF Aktiengesellschaft. Photosensitive recording material which can be developed with water, for the production of printing plates, relief plates or resist images. 4,554,240, Cl. 430-285.000.

Schurr, Anton: *See—*
Becker, Reinhard, deceased; Seber, Gudula, legal representative; Becker, Ulrich, legal representative; Becker, Hans C., legal representative; Becker, Gero, legal representative; Mussigmann, Artur; and Schurr, Anton, 4,553,811, Cl. 350-96.200.

Schwarz, Ernest D., II, to American Standard Inc. Hinge preparation assembly for a steel door frame. 4,553,286, Cl. 16-382.000.

Schwarzmann, Matthias: *See—*
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Schwerin, Vernon L.: *See—*
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Scott, Darwin H.: *See—*
Thompson, David S.; and Scott, Darwin H., 4,554,131, Cl. 420-546.000.

Scott, Edward L.; and Teague, Walter D., Jr. Hand-operated bicycle brake assembly. 4,553,641, Cl. 188-24.220.

Scott, James W.: *See—*
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Scott, Junius D., to FMC Corporation. Variable-frequency dual-motion feeder control using a single phase power source. 4,554,490, Cl. 318-130.000.

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Armstrong, William E., 4,554,411, Cl. 179-37.000.

Scull, Herbert M.; and Laurent, Sebastian M., to Ethyl Corporation. Gas stream purification. 4,554,141, Cl. 423-245.000.

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Provost, Lawrence A.; and Boyer, Robert D., 4,553,421, Cl. 72-402.000.

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Seemuth, Paul D., to Ethyl Corporation. Ring opening of cyclic nitro ketones. 4,554,387, Cl. 568-704.000.

Segawa, Makoto; and Ariizumi, Shoji, to Tokyo Shibaura Denki Kabushiki Kaisha. Static bootstrap semiconductor drive circuit. 4,554,469, Cl. 307-482.000.

Seifert, Janice P. Process of inlaying a design in molded simulated marble. 4,554,118, Cl. 264-73.000.

Seike, Haruo: *See—*
Takagaki, Tokujiro; Sasaki, Tetsuo; and Seike, Haruo, 4,554,227, Cl. 429-178.000.

Seiki, Ryosaburo: *See—*
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Ichinomiya, Toshio; Seiki, Ryosaburo; and Imai, Tatsuo, 4,554,214, Cl. 428-423.100.

Seikosha Co., Ltd.: *See—*
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Seiler, Bernard C.: *See—*
Cook, Joel M.; Flamm, Daniel L.; Mayer, Edward H.; and Seiler, Bernard C., 4,554,047, Cl. 156-643.000.

Seki, Yasuyuki: *See—*
Ohta, Tomohisa; Dobashi, Akihiko; Kanbara, Hisashige; and Seki, Yasuyuki, 4,554,174, Cl. 427-44.000.

Sellars, Graham P., to Burroughs Corporation. Track following code and track following system. 4,554,600, Cl. 360-77.000.

Semperlux GmbH: *See—*
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Sempuku, Kenji; Shibata, Yoshihisa; and Ohgi, Tadaaki, to Nippon Shinyaku Co., Ltd. Triazine derivatives. 4,554,275, Cl. 514-245.000.

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Senkel, Helmut: *See—*
Bansbach, Armin; and Senkel, Helmut, 4,554,619, Cl. 362-222.000.

Sera, Michitoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for encapsulating semiconductor devices. 4,554,126, Cl. 264-272.170.

Seraphim, Donald P.: *See—*
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Sergio, Sala, to Telmec SPA. Machine for the continuous gold-plating of contact tabs. 4,554,062, Cl. 204-206.000.

Seward, Irwin J., Jr.: *See—*
Nafziger, John L.; Rader, Laura A.; and Seward, Irwin J., Jr., 4,554,378, Cl. 564-332.000.

Sewell, Peter C.; Rundle, Gregory E.; and Hanson, Karl L., to Western Packaging Systems, Ltd. Automatic case erector and sealer. 4,553,954, Cl. 493-309.000.

Shaffer, Donald J. Engine with additional shared flow control runner for two cylinders. 4,553,507, Cl. 123-52.00M.

Shanley, Robert L., II; Yost, Thomas D.; and Lagoni, William A., to RCA Corporation. Keyed DC stabilization system with protection from error introduction during vertical sync interval. 4,554,577, Cl. 358-34.000.

Shanley, Robert L., II, to RCA Corporation. Control system for luminance/chrominance signal processing circuits. 4,554,588, Cl. 358-243.000.

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Haneda, Isamu; and Myooi, Tetsuo, 4,554,641, Cl. 364-710.000.
Ise, Masahiro; Tanaka, Hidehiko; Machino, Katsuyuki; Matsubara, Toshiyuki; and Terasaka, Teiji, 4,554,532, Cl. 340-501.000.
Ishii, Yutaka; Funada, Fumiaki; Takamatsu, Toshiaki; and Tomio, Wada, 4,553,821, Cl. 350-339.00R.
Nagano, Fumikazu; and Shirakoshi, Hiroshi, 4,554,563, Cl. 346-154.000.

Shaw, Herbert J.; and Digonnet, Michel J. F., to Leland Stanford Junior University, The Board of Trustees of. Switching fiber optic amplifier. 4,554,510, Cl. 330-4.300.

Shaw, James E., to Phillips Petroleum Company. Oil recovery method. 4,553,593, Cl. 166-270.000.

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Allen, Robert C., 4,554,341, Cl. 528-89.000.
Ayers, Ray R., 4,554,072, Cl. 210-242.300.
Corley, Larry S., 4,554,342, Cl. 528-90.000.
Dodd, Paul L., 4,553,776, Cl. 285-212.000.
Dong, Walter; and Petty, Walter L., 4,554,102, Cl. 260-112.50R.
Hansen, David R.; and Korcz, William H., 4,554,304, Cl. 524-291.000.
Hwo, Charles C.; Klingensmith, George B.; and Martone, John A., 4,554,321, Cl. 525-240.000.
Lambert, Jean C.; Barre, Guy; Dejaifve, Pierre; and Bidan, Gerard, 4,554,292, Cl. 518-728.000.
Langner, Carl G., 4,553,879, Cl. 405-270.000.
Mulder, Albertus J., 4,554,365, Cl. 549-463.000.
Neel, Emmanuel E. A.; Levavasseur, Jacques A.; and Reinalda, Donald, 4,554,268, Cl. 502-439.000.
Payne, George B.; Soloway, Samuel B.; Powell, James E.; Roman, Steven A.; and Kollmeyer, Willy D., 4,554,366, Cl. 549-463.000.
Pilgram, Kurt H.; and Skiles, Richard D., 4,554,283, Cl. 514-364.000.
Spaargaren, Klaas, 4,553,434, Cl. 73-304.00C.
Verbrugge, Pieter A., 4,554,109, Cl. 260-457.000.

Shen, Tsung-Ying: *See—*
Ponpipom, Mitree M.; Shen, Tsung-Ying; and Bugianesi, Robert L., 4,554,349, Cl. 536-55.000.

Shepard, Bobby L.: *See—*
Holbrook, Joe C.; and Shepard, Bobby L., 4,553,445, Cl. 74-130.000.

Sherman, Leonard H.; Swartz, James R.; and Williams, James M., to Genentech, Inc. Computer controlled motor. 4,554,499, Cl. 318-696.000.

Shibahashi, Yutaka: *See—*
Kito, Tutomu; Nakasuji, Norikazu; Kataoka, Takashi; Inagaki, Hiroshi; and Shibahashi, Yutaka, 4,554,565, Cl. 346-201.000.

Shibamoto, Takeshi: *See—*
Sugiyama, Hiroyuki; Shibamoto, Takeshi; Sato, Hideo; Furuki, Tsuneo; Kubo, Mitsuo; and Tanaka, Koji, 4,554,597, Cl. 358-335.000.

Shibata, Akira; Kojima, Noboru; and Kuroyanagi, Tomomitsu, to Hitachi, Ltd. Color video signal recording apparatus. 4,554,596, Cl. 358-330.000.

Shibata, Yoshihisa: *See—*
Sempuku, Kenji; Shibata, Yoshihisa; and Ohgi, Tadaaki, 4,554,275, Cl. 514-245.000.

Shibue, Toshiaki; and Nagayasu, Koichi, to Konishiroku Photo Industry Co., Ltd. Method of producing support for photographic paper. 4,554,175, Cl. 427-44.000.

Shields, Ronald H., to Lynch Machinery. Variable index glass ware press with computer control. 4,554,001, Cl. 65-160.000.

Shiga, Akinobu; Sasaki, Toshio; Kojima, Junpei; and Nunose, Akira, to Sumitomo Chemical Company, Limited. Process for producing α-olefin polymers using novel catalyst system. 4,554,264, Cl. 502-112.000.

Shima, Seiya: *See—*
Inaba, Hiromi; Shima, Seiya; Ando, Takeki; Kurosawa, Toshiaki; Katayama, Yasunori; Hatakeyama, Takanobu; and Hokari, Sadao, 4,553,640, Cl. 187-29.00R.

Shimada, Yasuo: *See—*
Wachi, Sadayuki; Ohiwa, Kenichi; Shimada, Yasuo; and Hino, Takao, 4,553,931, Cl. 432-246.000.

Shimadzu Corporation: *See—*
Fujinaga, Yasuhiro, 4,553,619, Cl. 177-185.000.
Shono, Toshiyuki; Kimura, Keiichi; and Maeda, Takumi, 4,554,362, Cl. 549-352.000.

Shimamune, Takayuki: *See—*
Asano, Hiroshi; Shimamune, Takayuki; Hirao, Kazuhiro; and Hirayama, Ryuta, 4,554,176, Cl. 427-125.000.

Shimamura, Toshikazu: *See—*
Kamei, Ryosuke; Kobayashi, Keiitsu; Nakamura, Akira; Shimamura, Toshikazu; Tsukada, Masamitsu; and Ono, Hisashi, 4,554,202, Cl. 428-225.000.

Shimaya, Tetsushi: *See—*
Mizukami, Akihiko; and Shimaya, Tetsushi, 4,553,530, Cl. 126-422.000.

Shimazu, Toshiaki, to Kabushiki Kaisha Daikin Seisakusho. Assistor for reducing stepping force. 4,553,470, Cl. 91-6.000.

Shimizu, Isoo: *See—*
Yamazaki, Yasuo; Suzuki, Takehiko; Shimizu, Isoo; and Matsumura, Yasuo, 4,554,360, Cl. 549-261.000.

Shimizu, Masuto: *See—*
Yaji, Motoyasu; Shimizu, Masuto; Yamanaka, Hiromitsu; and Koshikawa, Takao, 4,553,604, Cl. 164-453.000.

Shimizu, Shigehisa: *See—*
Kanaoka, Takeshi; and Shimizu, Shigehisa, 4,553,833, Cl. 355-40.000.
Kanaoka, Takeshi; and Shimizu, Shigehisa, 4,554,560, Cl. 346-108.000.

Shimizu, Shoji; Asakawa, Shirow; Saito, Yukihiro; and Ito, Yoshimasa, to Matsushita Electric Industrial Company, Limited; and Osaka Gas Co., Ltd. High-temperature furnace having selectively permeable membranes for oxygen enrichment. 4,553,988, Cl. 55-158.000.

Shimomoto, Yasuharu; Tanaka, Yasuo; Takasaki, Yukio; Ishioka, Sachio; Tsukada, Toshihisa; and Baji, Toru, to Hitachi, Ltd. Photoelectric conversion element. 4,554,478, Cl. 313-366.000.

Shin, Kju Hi; and Tatum, Edward F., to Ethyl Corporation. Unsymmetrical diphenolic compounds. 4,554,389, Cl. 568-722.000.

Shinko Electric Industries Co., Ltd.: *See—*
Kobayashi, Hiroshi; Muramatsu, Shinichi; Ichikawa, Yoshiro; and Mitsui, Seizo, 4,553,501, Cl. 118-669.000.

Shinoda, Kazuo, to Toyota Jidosha Kabushiki Kaisha. Electronically controlled fuel injection system. 4,554,634, Cl. 364-431.100.

Shinohara, Hirofumi: *See—*
Yoshimoto, Masahiko; Yoshihara, Tsutomu; Anami, Kenji; and Shinohara, Hirofumi, 4,554,646, Cl. 365-189.000.

Shintani, Fumio: *See—*
Oka, Koichi; and Shintani, Fumio, 4,553,734, Cl. 251-58.000.

Shiota, Eiji: *See—*
Arika, Junji; Shiota, Eiji; and Yamamoto, Kazuaki, 4,554,211, Cl. 428-402.000.

Shiozaki, Syuji, to Fujitsu Ten Limited. Cassette tape reproduction control arrangement. 4,554,599, Cl. 360-69.000.

Shirakoshi, Hiroshi: *See—*
Nagano, Fumikazu; and Shirakoshi, Hiroshi, 4,554,563, Cl. 346-154.000.

Shoaf, Myron D.: *See—*
Sorge, Richard M.; Ponzoni, Ronald W.; and Shoaf, Myron D., 4,554,167, Cl. 426-285.000.

Shoji, Fusaji: *See—*
Kataoka, Fumio; Shoji, Fusaji; Yokono, Hitoshi; Makino, Daisuke; Koibuchi, Shigeru; and Isobe, Asao, 4,554,237, Cl. 430-197.000.

Shono, Toshiyuki; Kimura, Keiichi; and Maeda, Takumi, to Shimadzu Corporation. Bis-crown-ether derivatives and their use. 4,554,362, Cl. 549-352.000.

Short, Edward H., III, to BS&B Safety Systems, Inc. Rupturable pressure relief assembly. 4,553,559, Cl. 137-68.00R.

Short, John P.; McLachlan, Craig J.; Messmer, Charles; and Reinecke, Paul S., to Harris Corporation. Electrochemical dielectric isolation technique. 4,554,059, Cl. 204-129.300.

Shortridge, Timothy D. Ski caddy. 4,553,779, Cl. 294-147.000.

Showa Denko Kabushiki Kaisha: *See—*
Kamei, Ryosuke; Kobayashi, Keiitsu; Nakamura, Akira; Shimamura, Toshikazu; Tsukada, Masamitsu; and Ono, Hisashi, 4,554,202, Cl. 428-225.000.

Showman, Gerald. Fluid pump assembly. 4,553,512, Cl. 123-196.00S.

Shu, Larry S.: *See—*
Derderian, Gregory; Orlandi, Robert D.; Shu, Larry S.; and Siadat, Bahram, 4,553,852, Cl. 374-1.000.

Shurtliff, Jeffrey L. System for producing precision measurements of wing ribs. 4,553,333, Cl. 33-180.00R.

Shuster, Herbert V., to Aseptic Technologies, Inc. Dilution bottle. 4,553,677, Cl. 215-33.000.

Siadat, Bahram: *See—*
Derderian, Gregory; Orlandi, Robert D.; Shu, Larry S.; and Siadat, Bahram, 4,553,852, Cl. 374-1.000.

Siegenthaler, Fritz, to Autelca AG. Coin collection box for automatic cashiers and coin changers. 4,553,694, Cl. 232-7.000.

Siegfried Aktiengesellschaft: *See—*
Zirngibl, Ludwig; and Thiele, Kurt, 4,554,356, Cl. 548-341.000.

Siemens Aktiengesellschaft: *See—*
Feigt, Ingmar; Heinrich, Hans; and Kempter, Karl, 4,554,453, Cl. 250-327.200.
Goepel, Ernst, 4,554,450, Cl. 250-231.0SE.
Grabmaier, Josef; and Falckenberg, Richard, 4,554,203, Cl. 428-229.000.
Kuntze, Rudolf, 4,554,637, Cl. 364-518.000.
Mahlein, Hans, 4,553,822, Cl. 350-377.000.
Schmalzl, Dieter, 4,554,400, Cl. 174-35.0GC.
Ullenboom, Hermann, 4,553,863, Cl. 400-121.000.

SIG Schweizerische Industrie-Gesellschaft: *See—*
Gasser, Markus, 4,553,658, Cl. 198-369.000.

Sikorski, James A.; and Hoobler, Mary A., to Monsanto Company. Method of controlling undesired plants with thiosulfenamide derivatives of n-phosphonomethylglycinonitriles. 4,554,009, Cl. 071-087.000.

Silken, Howard. Radial arm saw. 4,553,462, Cl. 83-471.300.

Sillitto, Hillary G., to Ferranti, plc. Optical elements. 4,554,448, Cl. 250-216.000.

Silverberg, Morton: *See—*
Burger, William R.; Hutton, James E.; and Silverberg, Morton, 4,553,828, Cl. 355-3.0BE.

Silvestrini, Bruno, to Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A. Use of bendazac and its salts in the treatment of retinitis pigmentosa. 4,554,288, Cl. 514-418.000.

Simeth, Claus: *See—*
Greiner, Harry M.; Fischer, Hermann; and Simeth, Claus, 4,553,478, Cl. 101-426.000.

Simonsen Laboratories, Inc.: *See—*
Russell, James D., 4,554,158, Cl. 424-89.000.

Simonton, Robert D. Flat cell battery connector seal. 4,554,226, Cl. 429-153.000.

Simpkins, F. Richard: *See—*
Ziegler, Michael J.; and Simpkins, F. Richard, 4,553,999, Cl. 65-84.000.

Simpson, Harold, to Ashland Products Company. Latch for pivotal sash window. 4,553,353, Cl. 49-161.000.

Sinclair, A. Richard: *See—*
Graham, John W.; and Sinclair, A. Richard, 4,553,596, Cl. 166-295.000.

Sinelschikov, Andrei K.: *See—*
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; Sinelschikov, Andrei K.; and Tolok, Vladimir T., 4,554,201, Cl. 428-215.000.

Singer Company, The: *See—*
Brauch, Robert B.; and Mihovch, John, 4,553,491, Cl. 112-465.000.
Franke, John M., Sr., 4,553,745, Cl. 270-45.000.
Hicks, Irwin A., 4,553,433, Cl. 73-273.000.

Sinker, Stephen M.; Baron, Joseph J., Jr.; Rupp, Raymond W.; Doerr, Marvin L.; and McChesney, Charles E., to Celanese Corporation. Modified PET polymers and copolymers suitable for extrusion blow molding. 4,554,328, Cl. 525-437.000.

Sinker, Stephen M.; and McChesney, Charles E., to Celanese Corporation. Modified PET polymers and copolymers suitable for extrusion blow molding. 4,554,329, Cl. 525-437.000.

Sircar, Ila; and Holmes, Ann, to Warner-Lambert Company. Substituted 2,2-dimethyl-5-phenoxypentanoic acid benzamides as antiarteriosclerotic agents and method. 4,554,282, Cl. 514-357.000.

Sirinyan, Kirkor; Wolf, Gerhard D.; Merten, Rudolf; and von Gizycki, Ulrich, to Bayer Aktiengesellschaft. Process for pretreating polyamide substrates for electroless metallization. 4,554,183, Cl. 427-306.000.

Sisk, Hollis D., to Century Electric, Inc. Field coil air vents for dynamoelectric machine. 4,554,475, Cl. 310-208.000.

Skelly, Jacinta; Howard, Colin R.; and Zuckerman, Arie J., to National Research Development Corporation. Hepatitis B vaccine. 4,554,157, Cl. 424-89.000.

SKF Kugellagerfabriken GmbH: *See—*
Walter, Lothar; Reith, Walter; and Winkler, Otmar, 4,553,796, Cl. 308-6.00C.

Skiles, Richard D.: *See—*
Pilgram, Kurt H.; and Skiles, Richard D., 4,554,283, Cl. 514-364.000.

Skilling, James: *See—*
Sargent, Brian; and Skilling, James, 4,554,630, Cl. 364-200.000.

Slaby, Jan: *See—*
Kasafirek, Evzen; Fric, Premysl; Slaby, Jan; and Roubalova, Alena, 4,554,100, Cl. 260-112.50R.

Slavin, Michael; and Miller, Ellsworth S., to Lectron Products, Inc. Electric wiring terminal and method of making same. 4,554,406, Cl. 174-94.00R.

Sloan, Jack: *See—*
Wilensky, Joseph, 4,553,397, Cl. 60-649.000.

Smagula, Michael S.: *See—*
Anderson, Noel E.; Fletcher, Donald E.; Smagula, Michael S.; and Parker, Darrell S., 4,554,169, Cl. 426-576.000.

Small, Richard D., Jr., to AT&T Technologies, Inc. Multilayer hybrid integrated circuit. 4,554,229, Cl. 430-17.000.

Smith, Douglas C., to AT&T Information Systems Inc. Resistive line circuit. 4,554,412, Cl. 179-78.00R.

Smith, Edward D.: *See—*
Duggal, Vinod K.; Lyford-Pike, Edward J.; and Smith, Edward D., 4,553,504, Cl. 123-25.00J.

Smith, Frank R. Automatic air brake control. 4,553,788, Cl. 303-7.000.

Smith, James C.: *See—*
Rehman, William R.; and Smith, James C., 4,553,701, Cl. 239-432.000.

Smith, Katherine R.: *See—*
Wacksman, David, 4,553,916, Cl. 418-173.000.

Smith, Lawrence N.: *See—*
Jillie, Don W.; and Smith, Lawrence N., 4,554,567, Cl. 357-5.000.

Smith, Paul F.; Schorman, Eric; Burke, Timothy M.; and Lynk, Charles N., Jr., to Motorola, Inc. Queued community repeater controller. 4,554,677, Cl. 455-54.000.

Smith, Roderick L., to Energy-Adaptive Grinding, Inc. Grinding control methods and apparatus. 4,553,355, Cl. 51-165.870.

Smith, Roy L.: *See—*
Koblitz, Francis F.; and Smith, Roy L., 4,553,940, Cl. 523-115.000.

Smith, Winthrop W., Jr. Programmable transform processor. 4,554,629, Cl. 364-200.000.

Smithgall, David H., Sr.: *See—*
Frazee, Ralph E., Jr.; and Smithgall, David H., Sr., 4,553,706, Cl. 242-18.00A.

Smithkline Beckman Corporation: *See—*
Stringer, Orum D.; and Weinstock, Joseph, 4,554,284, Cl. 514-367.000.
Stringer, Orum D.; and Weinstock, Joseph, 4,554,287, Cl. 514-387.000.

Smyth, Laurence C., to Norandex Inc. Process and apparatus for direct extrusion of thermal barrier profiles. 4,554,123, Cl. 264-166.000.

Snook, Harvey: *See—*
Curtain, Cyril C.; and Snook, Harvey, 4,554,390, Cl. 568-870.000.

Snyder, Irving F.; and Luebeck, Duane A., to Polaris Home Systems, Inc. Centrifugal sprayer having hollow cone feeder. 4,553,700, Cl. 239-215.000.

So, Eddy, to Canadian Patents and Development Limited-Societe Canadienne des Brevets et D'Exploitation Limtee . Replica circuit. 4,554,513, Cl. 330-85.000.

Societe Alsacienne de Construction de Material Textile: *See—*
Moesinger, Albert; Gosciniak, Guy; and Angebault, Joel, 4,553,570, Cl. 139-435.000.

Societe Anonyme D.B.A.: *See—*
Bailey, Ronald D.; Charbonnier, Jacques; and Chotard, Michel, 4,553,649, Cl. 188-340.000.
Carre , Jean-Jacques; and Pressaco, Pierre, 4,553,646, Cl. 188-196.0BA.

Societe Anonyme dite: Elf France: *See—*
Hagenbach, Germain; Maldonado, Paul; and Maurice, Jacques, 4,554,313, Cl. 525-54.500.

Societe de Recherches Industrielles S.O.R.I.: *See—*
Majoie, Bernard, 4,554,371, Cl. 560-52.000.

Societe de Transformation des Matieres Plastiques: *See—*
Heaume, Jean, 4,553,681, Cl. 220-72.000.

Societe de Vente de l'Aluminium Pechiney: *See—*
Boutevin, Bernard; Deiss, Willy-Jean; Maliszewicz, Marc; and Pietrasanta, Yves, 4,554,373, Cl. 560-192.000.

Societe Nationale Elf Aquitaine: *See—*
Abou Chakra, Taher; and De Jaeger, Roger, 4,554,113, Cl. 260-927.00N.

Societe Nationale Elf Aquitaine (Production): *See—*
Maurice, Jacques; Guesnet, Patrice; Tozzolino, Pierre; and Muller, Guy, 4,554,137, Cl. 423-26.000.

Societe Paris-Rhone: *See—*
Mazzorana, Alfred B., 4,553,442, Cl. 74-7.00A.

Sofranko, John A.: *See—*
Jones, C. Andrew; Leonard, John J.; and Sofranko, John A., 4,554,395, Cl. 585-500.000.

Sokira, Thomas J., to Anton/Bauer, Inc. Battery charging apparatus and method. 4,554,500, Cl. 320-31.000.

Soldanski, Heinz-Dieter; and Holdt, Bernd-Dieter, to Henkel KGaA. Liquid leather care compositions. 4,554,083, Cl. 252-8.570.

Soleille, Louis: *See—*
Vigouroux, Georges; Fort, Gilbert; and Soleille, Louis, 4,553,600, Cl. 166-343.000.

Solmat Systems Ltd.: *See—*
Assaf, Gad, 4,553,529, Cl. 126-415.000.

Soloway, Samuel B.: *See—*
Payne, George B.; Soloway, Samuel B.; Powell, James E.; Roman, Steven A.; and Kollmeyer, Willy D., 4,554,366, Cl. 549-463.000.

Sommer, Herbert; and Wohlfeil, Gerhard, to Jagenberg AG. Device for clamping and tensioning an elastic doctor blade. 4,553,498, Cl. 118-126.000.

Sommerville, John A.: *See—*
Coffee, Ronald A.; Bennett, Peter C.; Houghton, Leonard E.; Johnson, Graham C.; Sommerville, John A.; Boyce, Peter H.; and Currall, William J. P., 4,553,702, Cl. 239-690.000.

Sonnenberg, Bert. Cucumber harvester. 4,553,381, Cl. 56-327.00R.

Sorge, Richard M.; Ponzoni, Ronald W.; and Shoaf, Myron D., to General Foods Corp. Method for agglomerating aspartame and acid-containing mixes. 4,554,167, Cl. 426-285.000.

Sounai, Atuo; and Murata, Kenji, to Tokyo Shibaura Denki Kabushiki Kaisha. Molten carbonate fuel cell. 4,554,225, Cl. 429-34.000.

Spaargaren, Klaas, to Shell Oil Company. Capacitive level gauge. 4,553,434, Cl. 73-304.00C.

Spaargaren, Robert, to Allied Corporation. Wheel cylinder and torque plate construction. 4,553,647, Cl. 188-206.00R.

Speaker, Lois M., to Georgia Tech Research Corporation. Method of modifying membrane surface with oriented monolayers of amphiphilic compounds. 4,554,076, Cl. 210-639.000.

Spector, George: *See—*
Lamphere, Carla A.; and Spector, George, 4,553,921, Cl. 425-279.000.

Speers, Jerry M.: *See—*
Evans, John L.; Gehrig, George F.; and Speers, Jerry M., 4,553,429, Cl. 73-155.000.

Spelber, Leonard G.: *See—*
Tucker, Abraham I.; and Spelber, Leonard G., 4,553,560, Cl. 137-218.000.

Sperry Corporation: *See—*
Jillie, Don W.; and Smith, Lawrence N., 4,554,567, Cl. 357-5.000.
Schultz, Dale E., 4,554,664, Cl. 371-25.000.

Speth, Peter J. Windshield wiper adapter. 4,553,283, Cl. 15-250.320.

Spofa, Spojene podniky pro zdravotnickou vyrobu: *See—*
Kasafirek, Evzen; Fric, Premysl; Slaby, Jan; and Roubalova, Alena, 4,554,100, Cl. 260-112.50R.

Sprague Electric Company: *See—*
Childs, John J., 4,554,612, Cl. 361-306.000.

Spratt, Brendan J.; Pryor, David J.; Jones, James B., Jr.; Davis, Dennis W.; and Frazier, Richard V., Jr., to Allied Corporation. Range processor for DME. 4,554,547, Cl. 343-7.300.

Sprecker, Mark A.: *See—*
Wiegers, Wilhelmus J.; and Sprecker, Mark A., 4,554,096, Cl. 252-522.00R.

Springer, John A.: *See—*
Greer, Charles B.; Keehan, Donald W.; and Springer, John A., 4,554,648, Cl. 367-49.000.

Staalkat B.V.: *See—*
van der Schoot, Jelle, 4,553,661, Cl. 198-428.000.

Stabilimento Industriale Srl: *See—*
Primati, Marco; and Calderini, Leonardo, 4,553,343, Cl. 38-33.000.

Stackman, Robert W.; Summerville, Richard H., deceased; and Summerville, James E., Jr., heir, to Celanese Corporation. Production of N-vinyl carboxylic acid amides. 4,554,377, Cl. 564-205.000.

Stahl, Werner; and Barten, Axel. Work-holding fixture for metal power saws. 4,553,460, Cl. 83-113.000.

Stain, Donald B.: *See—*
Worthington, Ralph E.; Magdics, Alex; and Stain, Donald B., 4,554,151, Cl. 423-551.000.

Stamicarbon B.V.: *See—*
Groeneveld, Christiaan; Knol, Dirk; Verstegen, Johannes D. M.; and Jansen, Jacobus, 4,554,386, Cl. 568-697.000.

Standard Oil Company, The: *See—*
Greene, Janice L.; and Loza, Roman, 4,554,345, Cl. 528-336.000.

Stanland, Andrew J.: *See—*
Olesen, Ralph C.; Sainati, Robert A.; Gropelli, John J., Jr.; and Stanland, Andrew J., 4,554,554, Cl. 343-895.000.

Stauffer Chemical Company: *See—*
Carter, Charles G.; and Lee, David L., 4,554,014, Cl. 71-94.000.
Gray, Reed A., 4,554,008, Cl. 71-83.000.
Wong, Rayman Y., 4,554,277, Cl. 514-277.000.

Ste Look: *See—*
Bernard, Jean; Beyl, Jean J. A.; Campillo, Christian; and le Faou, Daniel, 4,553,771, Cl. 280-615.000.

Stedman Corporation: *See—*
Odham, Carl J., 4,553,412, Cl. 66-207.000.

Stein, Joseph L.; and Maskell, Thomas J., to General Refractories Company. Method of manufacturing a slide gate. 4,554,035, Cl. 156-89.000.

Steinman, Martin; and Wong, Yee-Shing, to Schering Corporation. Preparation of 4-acyloxyazetidinones from acyl nitrates and penams. 4,554,103, Cl. 260-239.00A.

Steinmetz, Alan L.: *See—*
Krinski, Thomas L.; and Steinmetz, Alan L., 4,554,337, Cl. 527-201.000.

Stelter, Norbert: *See—*
Bofinger, Gerd; Stelter, Norbert; and Wuest, Rainer, 4,553,654, Cl. 192-0.076.

Stephan, Hans: *See—*
Maul, Rudolf; Stephan, Hans; and Wolf, Walter, 4,554,368, Cl. 556-91.000.

Sterling, Vaughn C.: *See—*
Lorenzen, Steven C.; and Sterling, Vaughn C., 4,553,928, Cl. 431-359.000.

Stern, Robert; and Hillion, Gerard, to Institut Francais du Petrole. Process for manufacturing a linear olefin from a saturated fatty acid or fatty acid ester. 4,554,397, Cl. 585-638.000.

Sternberg, Robert L., to United States of America, Navy. Ellipticized acoustical lens providing balanced astigmatism. 4,553,629, Cl. 181-176.000.

Sterrett, Terry L.: *See—*
Kidd, Patrick D.; and Sterrett, Terry L., 4,554,336, Cl. 526-301.000.

Stevens, Peter F.: *See—*
Pinede, Edouard; Faublas, Serge; and Stevens, Peter F., 4,554,413, Cl. 179-99.00M.

Stevens, Reginald W., to International Computers Limited. Sequential data transmission system with resynchronization. 4,554,673, Cl. 375-118.000.

Stewart-Cox, Adrian R., to British-American Tobacco Company Limited. Cigarette making machines. 4,553,555, Cl. 131-110.000.

Stiegler, Reinhard. Apparatus for relieving psychological stress. 4,553,534, Cl. 128-24.100.

Stiff, Omar L.: *See—*
Miller, William D.; Stiff, Omar L.; and Mercurio, Benardo, 4,553,900, Cl. 414-745.000.

Stilwell, George R., Jr: *See—*
Bahl, Andrew L.; Stilwell, George R., Jr; Uberbacher, Edward C.; and Williamson, Charles A., 4,553,814, Cl. 350-96.210.

Stinebaugh, Donald E. Internal combustion engine. 4,553,508, Cl. 123-58.0AA.

Stirling Technology, Inc.: *See—*
Chagnot, Bruce J.; and Wood, James G., 4,553,392, Cl. 60-517.000.

Stoeckel, Dieter: *See—*
Tautzenberger, Peter; Schneider, Friedrich; and Stoeckel, Dieter, 4,554,027, Cl. 148-11.50R.

Stoehr, Herbert M.; and Toben, John J., to Artos Engineering Company. Apparatus for producing elongated workpieces of predetermined transverse profile. 4,553,418, Cl. 72-132.000.

Stohrer, Charles E., Jr., to Harper-Wyman Company. Two-way adjustable grate and method for adjusting the length and width. 4,553,523, Cl. 126-9.00B.

Stoll, Robert W.; and MacLaury, Michael R., to General Electric Company. Method for treating fumed silica. 4,554,147, Cl. 423-335.000.

Stolt, Lars: *See—*
Tove, Per-Arne; Bohlin, Kjell; Stolt, Lars; and Norde, Herman, 4,554,569, Cl. 357-15.000.

Storage Technology Corporation: *See—*
Huffman, James; Brandt, Kim; and Doutre, Alton G., 4,553,892, Cl. 414-121.000.

Stork Screens B.V.: *See—*
van der Velden, Hendricus J., 4,554,040, Cl. 156-215.000.
Stough, Donald M.: *See—*
Nelson, Robert L.; and Stough, Donald M., 4,553,924, Cl. 431-12.000.
Strachan, Donald C. Mattress carrying harness. 4,553,780, Cl. 294-152.000.
Straith, Richard E. Airway. 4,553,540, Cl. 128-200.260.
Stratton, Joseph F.: *See—*
Murphy, Arthur J.; and Stratton, Joseph F., 4,554,446, Cl. 235-487.000.
Streiff, Werner: *See—*
Zihlmann, Siegfried; and Streiff, Werner, 4,553,321, Cl. 29-598.000.
Stretch Emballering AB: *See—*
Back, Karl J., 4,553,372, Cl. 53-411.000.
Stright, Ramon L. Water hose fitting tool. 4,553,280, Cl. 7-157.000.
Stringer, Orum D.; and Weinstock, Joseph, to Smithkline Beckman Corporation. 7-(2-Aminoethyl)-1,3-benzthia- or oxa-zol-2(3H)-ones. 4,554,284, Cl. 514-367.000.
Stringer, Orum D.; and Weinstock, Joseph, to Smithkline Beckman Corporation. Antihypertensive 7-[2-(dialkylamino)ethyl]-4-hydroxy-1,3-benzimidazol-2-ones. 4,554,287, Cl. 514-387.000.
Strobl, Otto; Blien, Harry; and Uliczka, Wolfgang. Apparatus for producing a wide fibrous web. 4,553,289, Cl. 19-161.100.
Strumbos, William P. Vacuum cleaner universal nozzle. 4,553,284, Cl. 15-414.000.
Struve, Klaus-Dieter: *See—*
Haas, Heinz; and Struve, Klaus-Dieter, 4,554,194, Cl. 428-40.000.
Strzegowski, Joseph C., Jr.: *See—*
Turner, Edward W.; Blake, Peter J.; and Strzegowski, Joseph C., Jr., 4,553,464, Cl. 83-865.000.
Studiengesellschaft Kohle mbH: *See—*
Bogdanovic, Borislav, 4,554,152, Cl. 423-647.000.
Bogdanovic, Borislav, 4,554,153, Cl. 423-647.000.
Sturdevant, Norman J., Jr.: *See—*
Pacini, Dino J.; Miceli, Edward C.; and Sturdevant, Norman J., Jr., 4,554,416, Cl. 179-170.0NC.
Su, Kai C., to Ciba Geigy Corporation. Tinted contact lenses and a method for their preparation. 4,553,975, Cl. 8-507.000.
Su, Taian: *See—*
Tarbox, Bruce H.; Rathbun, Donald J.; and Su, Taian, 4,554,598, Cl. 360-48.000.
Suda, Yoshiyuki: *See—*
Tanuma, Chiaki; Yokoyama, Katsunori; and Suda, Yoshiyuki, 4,554,586, Cl. 358-213.000.
Sudoh, Chuzoh; Hagita, Hyoji; and Fujii, Satoru, to Sumitomo Metal Industries, Ltd. Dry type continuous wire drawing process. 4,553,416, Cl. 72-40.000.
Sudrabin, David A., to Fibrestone Incorporated. Horizontally poured Fibrestone building construction. 4,554,124, Cl. 264-263.000.
Suematsu, Koshi: *See—*
Imai, Eiichi; Takenouchi, Masanori; Uchiyama, Masaki; and Suematsu, Koshi, 4,554,234, Cl. 430-122.000.
Sueyasu, Seisuke: *See—*
Yoda, Yasutada; Sueyasu, Seisuke; and Futamura, Shoji, 4,553,918, Cl. 425-46.000.
Suganuma, Tadao, to Elionix, Inc. Method and apparatus for handling charged particle beam. 4,554,452, Cl. 250-310.000.
Sugihara, Masahiro: *See—*
Morishita, Etsuo; Sugihara, Masahiro; Inaba, Tsutomu; and Nakamura, Toshiyuki, 4,553,913, Cl. 418-55.000.
Sugihara, Masanori, to Pioneer Electronic Corporation. Mode switch operating device for tape recorder. 4,554,601, Cl. 360-90.000.
Sugimoto, Shigeo: *See—*
Yokoyama, Eiji; Kaneko, Tadao; Amano, Yoshiaki; and Sugimoto, Shigeo, 4,554,223, Cl. 429-20.000.
Sugita, Hiroshi: *See—*
Sato, Ryosuke; Kato, Katsunori; Sasaki, Takashi; and Sugita, Hiroshi, 4,554,244, Cl. 430-552.000.
Sugiyama, Hiroyuki; Shibamoto, Takeshi; Sato, Hideo; Furuki, Tsuneo; Kubo, Mitsuo; and Tanaka, Koji, to Victor Company of Japan, Ltd. Memory utilization control system for compressed digital picture data transmission system. 4,554,597, Cl. 358-335.000.
Sugiyama, Terumasa: *See—*
Suzuki, Takanobu; Nakayama, Kenichiro; Takahashi, Izumi; and Sugiyama, Terumasa, 4,554,662, Cl. 371-20.000.
Sukegawa, Tsuneo: *See—*
Ooi, Kazushige; Fujiwara, Shigekazu; Yoshida, Nobuaki; and Sukegawa, Tsuneo, 4,554,587, Cl. 358-228.000.
Sumitomo Chemical Company, Limited: *See—*
Funaki, Yuji; Oshita, Hirofumi; Yamamoto, Shigeo; Tanaka, Shizuya; and Kato, Toshiro, 4,554,007, Cl. 71-076.000.
Sasaki, Mitsuru; and Ishiguri, Yukio, 4,554,111, Cl. 260-502.40R.
Shiga, Akinobu; Sasaki, Toshio; Kojima, Junpei; and Nunose, Akira, 4,554,264, Cl. 502-112.000.
Sumitomo Electric Industries, Ltd.: *See—*
Chigusa, Yoshiki, 4,553,995, Cl. 65-4.200.
Moriya, Michio, 4,553,787, Cl. 303-6.00C.
Sumitomo Metal Industries, Ltd.: *See—*
Sudoh, Chuzoh; Hagita, Hyoji; and Fujii, Satoru, 4,553,416, Cl. 72-40.000.
Wachi, Sadayuki; Ohiwa, Kenichi; Shimada, Yasuo; and Hino, Takao, 4,553,931, Cl. 432-246.000.
Sumitomo Naugatuck Co., Ltd.: *See—*
Sakano, Hajime; Ito, Akitoshi; Yano, Motoichi; Honda, Yasuhiro; and Fujiwara, Takayoshi, 4,554,316, Cl. 525-71.000.
Summers, Frank V.; Meissner, David C.; and Brown, Ronald, to Midrex International BV Rotterdam, Zurich Branch. Apparatus for generating a reducing gas. 4,553,742, Cl. 266-156.000.
Summerville, Don S.: *See—*
King, Eddie W.; Duke, Herman K.; and Summerville, Don S., 4,554,419, Cl. 200-5.00A.
Summerville, James E., Jr., heir: *See—*
Stackman, Robert W.; Summerville, Richard H., deceased; and Summerville, James E., Jr., heir, 4,554,377, Cl. 564-205.000.
Summerville, Richard H., deceased: *See—*
Stackman, Robert W.; Summerville, Richard H., deceased; and Summerville, James E., Jr., heir, 4,554,377, Cl. 564-205.000.
Sun-Diamond Growers of California: *See—*
Gunnerson, Robert E., 4,554,168, Cl. 426-473.000.
Sundberg, Jack G.: *See—*
Noell, Godwin L.; and Sundberg, Jack G., 4,553,914, Cl. 418-69.000.
Suomala, John E.; Bratton, Kenneth L.; Bergsten, Sten E.; Savic, Nicolas M.; and Gardner, E. Boyd, to Emhart Industries, Inc. Molten glass spout bowl refractory tube support mechanism and method of control. 4,554,000, Cl. 65-129.000.
Surface Science Laboratories, Inc.: *See—*
Kelly, Michael A., 4,554,457, Cl. 250-396.0ML.
Surgikos, Inc.: *See—*
Morris, Henrietta K., 4,553,539, Cl. 128-132.00D.
Sutter, Franz, to Institute Straumann AG. Device including a screw pin and a driven member for screwing the pin into a tooth. 4,553,942, Cl. 433-225.000.
Suzuki, Akira: *See—*
Mitsui, Kenji; and Suzuki, Akira, 4,554,409, Cl. 178-19.000.
Suzuki, Hikoshiro: *See—*
Ichikawa, Isamu; Fukushi, Yutaka; Kamata, Keiji; and Suzuki, Hikoshiro, 4,553,696, Cl. 236-49.000.
Suzuki, Isao; and Abe, Kenichi, to Jidosha Kiki Co., Ltd. Exhaust brake apparatus of sliding type. 4,553,648, Cl. 188-273.000.
Suzuki Jidosha Kogyo Kabushiki Kaisha: *See—*
Namba, Yuzuru; Aoyagi, Kenichi; and Yokoyama, Hiroshi, 4,553,514, Cl. 123-308.000.
Suzuki, Takanobu; Nakayama, Kenichiro; Takahashi, Izumi; and Sugiyama, Terumasa, to Fuji Xerox Co., Ltd. Input signal testing device for electronic copier. 4,554,662, Cl. 371-20.000.
Suzuki, Takehiko: *See—*
Yamazaki, Yasuo; Suzuki, Takehiko; Shimizu, Isoo; and Matsumura, Yasuo, 4,554,360, Cl. 549-261.000.
Suzuki, Yasuo: *See—*
Matsumoto, Kenji; and Suzuki, Yasuo, 4,553,579, Cl. 152-450.000.
Swain, James C.; and Thomas, David L., to Diesel Kiki Co., Ltd. Variable capacity wobble plate compressor with high stability of capacity control. 4,553,905, Cl. 417-222.000.
Swartz, James R.: *See—*
Sherman, Leonard H.; Swartz, James R.; and Williams, James M., 4,554,499, Cl. 318-696.000.
Swatty, Gene: *See—*
Brundage, Robert W.; and Swatty, Gene, 4,553,732, Cl. 251-30.010.
Swick, Edwin G.: *See—*
Ruehl, William E.; Heidorn, Richard H.; and Swick, Edwin G., 4,554,609, Cl. 361-119.000.
Swords, Richard J.: *See—*
Parker, Richard L.; Swords, Richard J.; and Griffin, Larry E., 4,553,698, Cl. 239-3.000.
Sybron Corporation: *See—*
Kidd, Patrick D.; and Sterrett, Terry L., 4,554,336, Cl. 526-301.000.
Olsen, Robert A., 4,553,938, Cl. 433-126.000.
Symons Corporation: *See—*
Connors, Frank T., 4,553,729, Cl. 249-40.000.
Syntex (U.S.A.) Inc.: *See—*
Vickery, Brian H., 4,553,972, Cl. 604-892.000.
Tabaru, Kazunori; Aoyama, Takafumi; and Kumakura, Toshio. Magnetic toner. 4,554,232, Cl. 430-106.600.
Taguchi, Masahiro: *See—*
Tsuge, Noboru; and Taguchi, Masahiro, 4,553,625, Cl. 180-268.000.
Taguchi, Minoru; and Sasaki, Gen, to Kabushiki Kaisha Toshiba. Method of selectively etching high impurity concentration semiconductor layer. 4,554,046, Cl. 156-637.000.
Taig, Alistair G.: *See—*
Parks, Kevin B.; Jordan, David D.; and Taig, Alistair G., 4,553,949, Cl. 464-153.000.
Tajiri, Norikiyo: *See—*
Kanai, Mikio; Hatano, Hideki; Tajiri, Norikiyo; Otaki, Sakashi; and Kato, Sigeru, 4,554,651, Cl. 369-13.000.
Takagaki, Tokujiro; Sasaki, Tetsuo; and Seike, Haruo, to Japan Storage Battery Company Limited. Alkaline battery. 4,554,227, Cl. 429-178.000.
Takagi, Hiroyoshi, to Hitachi Maxell, Ltd. Recording tape cartridge. 4,553,717, Cl. 242-198.000.
Takagi, Shozo. Mold supporting arrangement. 4,553,795, Cl. 308-6.00R.
Takahashi, Izumi: *See—*
Suzuki, Takanobu; Nakayama, Kenichiro; Takahashi, Izumi; and Sugiyama, Terumasa, 4,554,662, Cl. 371-20.000.
Takahashi, Masayoshi: *See—*
Nomoto, Reishi; Takahashi, Masayoshi; and Ebata, Yoshikazu, 4,553,544, Cl. 128-340.000.
Takahashi, Wataru: *See—*
Genji, Nobuo; Takahashi, Wataru; Nakamura, Masatatsu; and Kawai, Yoichi, 4,553,413, Cl. 68-12.00R.

Takamatsu, Hiroshi: *See*—
Furukawa, Yoshimi; Sano, Shoichi; Takamatsu, Hiroshi; and Sato, Makoto, 4,553,768, Cl. 280-91.000.
Takamatsu, Toshiaki: *See*—
Ishii, Yutaka; Funada, Fumiaki; Takamatsu, Toshiaki; and Tomio, Wada, 4,553,821, Cl. 350-339.00R.
Takao, Masayasu, to Q.P. Corporation; and Nitto Hogei Co., Ltd., a part interest. Refined fish oils and the process for production thereof. 4,554,107, Cl. 260-421.000.
Takao, Mitsunori; Kimura, Takahiko; and Omori, Norio, to Nippondenso Co., Ltd. Air-fuel ratio control for an exhaust gas recirculation engine. 4,553,518, Cl. 123-478.000.
Takara Shuzo Co., Ltd.: *See*—
Sano, Susumu; Ikai, Katsushige; Kuroda, Hiroyuki; Nakamura, Teruya; Enomoto, Hiroshi; and Ezure, Yoji, 4,554,289, Cl. 514-450.000.
Takasago, Masahiro: *See*—
Maeda, Takeshi; Tsunoda, Yoshito; Huno, Takakazu; Takasago, Masahiro; and Mizoguchi, Yasumitsu, 4,554,652, Cl. 369-44.000.
Takasaki, Yukio: *See*—
Shimomoto, Yasuharu; Tanaka, Yasuo; Takasaki, Yukio; Ishioka, Sachio; Tsukada, Toshihisa; and Baji, Toru, 4,554,478, Cl. 313-366.000.
Takawashi, Tamio; Sakakibara, Toshimitsu; and Yamada, Shigeo, to Mitsubishi Denki Kabushiki Kaisha. Electrospark machining control device. 4,554,428, Cl. 219-69.00G.
Takaya, Takao; Yasuda, Nobuyoshi; Tsutsumi, Hideo; and Matsuda, Keiji, to Fujisawa Pharmaceutical Co., Ltd. Kasugamycin derivatives, pharmaceutical compositions and method of use. 4,554,269, Cl. 514-35.000.
Takebe, Yasushi; Iuchi, Koji; and Tsukamoto, Goro, to Kanebo, Ltd. 4-Chloro-4-methyl-5-methylene-1,3-dioxolane-2-one. 4,554,358, Cl. 549-229.000.
Takeda, Jun: *See*—
Kojiro, Tetsuya; and Takeda, Jun, 4,553,812, Cl. 350-96.200.
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, to Toyo Soda Manufacturing Co., Ltd. Aryl N-alkyl-N-(pyridyl or pyrimidyl) carbamate. 4,554,012, Cl. 71-92.000.
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, to Toyo Soda Manufacturing Co., Ltd. Herbicides. 4,554,015, Cl. 71-100.000.
Takenouchi, Masanori: *See*—
Imai, Eiichi; Takenouchi, Masanori; Uchiyama, Masaki; and Suematsu, Koshi, 4,554,234, Cl. 430-122.000.
Takenoya, Hideaki; and Mishima, Fumiyuki, to Janome Sewing Machine Industry Co. Ltd. Impact type color printer. 4,553,870, Cl. 400-662.000.
Taki, Hirokazu: *See*—
Fujiwara, Kunio; Katoo, Hisashi; Satoo, Fumihide; and Taki, Hirokazu, 4,554,498, Cl. 318-640.000.
Tanaka, Hidehiko: *See*—
Ise, Masahiro; Tanaka, Hidehiko; Machino, Katsuyuki; Matsubara, Toshiyuki; and Terasaka, Teiji, 4,554,532, Cl. 340-501.000.
Tanaka, Koji: *See*—
Sugiyama, Hiroyuki; Shibamoto, Takeshi; Sato, Hideo; Furuki, Tsuneo; Kubo, Mitsuo; and Tanaka, Koji, 4,554,597, Cl. 358-335.000.
Tanaka, Noriaki: *See*—
Kosaka, Akira; Murao, Sawao; Hirano, Kenichi; Tanaka, Noriaki; and Matsunaga, Kuniyoshi, 4,554,249, Cl. 435-10.000.
Tanaka, Shizuya: *See*—
Funaki, Yuji; Oshita, Hirofumi; Yamamoto, Shigeo; Tanaka, Shizuya; and Kato, Toshiro, 4,554,007, Cl. 71-076.000.
Tanaka, Shunpei; and Kimura, Kenji, to Olympus Optical Co., Ltd. Video signal recording/reproducing apparatus with crosstalk and tracking error elimination. 4,554,595, Cl. 358-328.000.
Tanaka, Toshinori: *See*—
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Tanaka, Toshinori; and Yabunaka, Kiyoshi, 4,553,441, Cl. 74-7.00R.
Tanaka, Yasuo: *See*—
Shimomoto, Yasuharu; Tanaka, Yasuo; Takasaki, Yukio; Ishioka, Sachio; Tsukada, Toshihisa; and Baji, Toru, 4,554,478, Cl. 313-366.000.
Tangorra, Giorgio; Cicognani, Mario; and Macchiarulo, Vincenzo, to Industrie Pirelli S.p.A. Toothed-belt and toothed-pulley transmission. 4,553,952, Cl. 474-153.000.
Taniguchi, Yutaka, to Fuji Photo Film Co., Ltd. Optical system for scanning with laser beam. 4,554,454, Cl. 250-327.200.
Tanimoto, Masahiro, to Horiba, Ltd. Gas doser. 4,553,423, Cl. 73-1.00G.
Taniuchi, Tetsuo; and Tsujimoto, Yoshinobu, to Matsushita Electric Industrial Co., Ltd. Fiber optic magnetic field sensor. 4,554,449, Cl. 250-227.000.
Tanner, Mark. Pollution inhibitor packing nut. 4,553,637, Cl. 184-15.100.
Tanoue, Tomonori: *See*—
Sakaki, Hiroyuki; Tanoue, Tomonori; and Nojiri, Hidetoshi, 4,553,317, Cl. 29-572.000.
Tanuma, Chiaki; Yokoyama, Katsunori; and Suda, Yoshiyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Solid state image sensing device. 4,554,586, Cl. 358-213.000.
Tapner, Peter N.: *See*—
Collett, Geoffrey K.; Martin-Jones, Christopher B.; Tapner, Peter N.; Commander, David J.; Gilbey, Mark S.; and Berks, Robert S., 4,553,490, Cl. 112-38.000.
Tarbox, Bruce H.; Rathbun, Donald J.; and Su, Taian, to Honeywell Information Systems, Inc. Single revolution disk sector formatter. 4,554,598, Cl. 360-48.000.
Tasaka, Yoshihiro; Nakamichi, Toshihiro; and Katsuhara, Yutaka, to Central Glass Company Limited. Dehydrating decomposition process for preparing carbonyl compound. 4,554,382, Cl. 568-404.000.
Tasch, Al F., Jr.: *See*—
Houston, Theodore W.; Tasch, Al F., Jr.; Darley, Henry M.; and Fu, Horng S., 4,553,316, Cl. 29-571.000.
Task, Harry L., to United States of America, Air Force. Diffuse incandescent runway marker light apparatus for overt/covert operation. 4,554,544, Cl. 340-953.000.
Task, Harry L.: *See*—
Wyatt, Ivan S.; and Task, Harry L., 4,554,543, Cl. 340-948.000.
Tatematsu, Takashi, to Kabushiki Kaisha Ishida Koki Seisakusho. Article discharge apparatus in automatic weighing system. 4,553,617, Cl. 177-25.000.
Tatsuno, Koji, to Uryu Seisaku, Ltd. Oil pressure type pneumatic torque wrench. 4,553,948, Cl. 464-25.000.
Tatum, Edward F.: *See*—
Shin, Kju Hi; and Tatum, Edward F., 4,554,389, Cl. 568-722.000.
Tautzenberger, Peter; Schneider, Friedrich; and Stoeckel, Dieter, to G. Rau GmbH & Co. Shaped part made of a composite material and a process for its production. 4,554,027, Cl. 148-11.50R.
Taylor, Christopher J.: *See*—
Wiggs, Christopher C.; and Taylor, Christopher J., 4,553,754, Cl. 273-153.00S.
Taylor, David H., to Thermo King Corporation. Transport refrigeration air system. 4,553,403, Cl. 62-239.000.
Taylor, Frances H. Disposable relief container with secural liner. 4,553,969, Cl. 604-355.000.
Taylor, Graham: *See*—
Jones, Robert A.; Jones, Frank; and Taylor, Graham, 4,554,091, Cl. 252-187.250.
Taylor, Mark P.: *See*—
Chyung, Kenneth; Schultz, Peter C.; and Taylor, Mark P., 4,554,197, Cl. 428-113.000.
Tea Industries, Inc.: *See*—
James, Max F., 4,554,039, Cl. 156-213.000.
Teague, Walter D., Jr.: *See*—
Scott, Edward L.; and Teague, Walter D., Jr., 4,553,641, Cl. 188-24.220.
Teich, Christian M., to Deere & Company. Flip-up shield assembly for tractor power take-off. 4,553,950, Cl. 464-176.000.
Tektronix, Inc.: *See*—
Jackson, Ronald M., 4,554,536, Cl. 340-747.000.
McKibben, Barry A., 4,554,489, Cl. 315-399.000.
Telander, Lee W. Pipe thread protector. 4,553,567, Cl. 138-96.00T.
Telmec SPA: *See*—
Sergio, Sala, 4,554,062, Cl. 204-206.000.
Telpac Company Limited: *See*—
Glen, John D.; and Glen, Rose-Mary M., 4,554,114, Cl. 261-95.000.
Tentler, Michael; Walker, David L.; Bretl, Wayne E.; and Williams, Gregory A., to Zenith Radio Corporation. STV Decoder with improved data signal recognition capability. 4,554,581, Cl. 358-120.000.
Teppichwerk Neumunster GmbH: *See*—
Haas, Heinz; and Struve, Klaus-Dieter, 4,554,194, Cl. 428-40.000.
Terajima, Yoshimi; Akitoshi, Hiroshi; and Nagatani, Nobuaki, to Toyo Seikan Kaisha, Ltd. Bag-shaped container with a straw insert hole formed and method of producing the same. 4,553,693, Cl. 229-7.00S.
Teramachi, Hiroshi. Recirculating-ball linear bearing with a guide rail. 4,553,793, Cl. 308-6.00C.
Teramachi, Hiroshi. Linear slide roller bearing unit. 4,553,794, Cl. 308-6.00C.
Teramoto, Yoshikichi: *See*—
Sakagami, Teruo; Arakawa, Noriyuki; Teramoto, Yoshikichi; and Nakamura, Kenichi, 4,554,335, Cl. 526-249.000.
Terasaka, Teiji: *See*—
Ise, Masahiro; Tanaka, Hidehiko; Machino, Katsuyuki; Matsubara, Toshiyuki; and Terasaka, Teiji, 4,554,532, Cl. 340-501.000.
Teringer, Imre: *See*—
Kovari, Pal; Galambos, Tibor; Bogisich, Ferenc; and Teringer, Imre, 4,553,885, Cl. 409-201.000.
Terni - Societa per l'Industria e l'Elettricita SpA: *See*—
Marini, Paolo; and Candiotti, Marcello, 4,554,213, Cl. 428-418.000.
Terry, Robert E.: *See*—
Alford, James L.; and Terry, Robert E., 4,554,552, Cl. 343-786.000.
Tervamaki, Jukka; Fagerstedt, Mikael; Kukka, Aarre; and Kaski, Erkki, to Labsystems Oy. Pipette with adjustable volume. 4,554,134, Cl. 422-100.000.
Tessier, Jean: *See*—
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,554,361, Cl. 549-302.000.
Tessitore, Pietro T. Hydroxybenzenesulfonic acid salts of 5-(o-chlorobenzyl)-4,5,6,7-tetrahydrothiene [3,2-c] pyridine useful in inhibiting blood-platelet aggregation. 4,554,278, Cl. 514-301.000.
Tetra Tech, Inc.: *See*—
Braun, Steve W., 4,554,511, Cl. 330-9.000.
Teutelink, Bernard C.: *See*—
Raisin, Helmut; and Teutelink, Bernard C., 4,553,976, Cl. 8-639.000.

Texaco Inc.: *See*—
Crone, John M., Jr.; Kuhlmann, Erven J.; and McMahon, Matthew A., 4,553,499, Cl. 118-428.000.
Headley, James A., 4,554,080, Cl. 252-8.50A.
Huang, Wann-Sheng; and Brown, Alfred, 4,553,595, Cl. 166-278.000.
Karol, Thomas J.; and Magaha, Harold S., 4,554,086, Cl. 252-49.600.
Knifton, John F., 4,554,383, Cl. 568-428.000.
Lin, Jiang-Jen, 4,554,374, Cl. 560-204.000.
Lin, Jiang-Jen; and Alexander, David C., 4,554,375, Cl. 560-244.000.
Looney, Mark D.; and Savage, Kerry D., 4,553,592, Cl. 166-248.000.
Sanderson, John R.; Yeakey, Ernest L.; and Lin, Jiang-Jen, 4,554,364, Cl. 549-453.000.

Texas Instruments Incorporated: *See*—
Chatterjee, Pallab K., 4,554,572, Cl. 357-42.000.
Hansson, Jan I., 4,553,436, Cl. 73-517.00R.
Houston, Theodore W.; Tasch, Al F., Jr.; Darley, Henry M.; and Fu, Horng S., 4,553,316, Cl. 29-571.000.
Kuo, Chang-Kiang, 4,554,643, Cl. 365-104.000.

Texas Processed Plastics, Inc.: *See*—
Powell, Bert R.; and Collins, Albert L., 4,553,352, Cl. 47-71.000.

Theodor Groz & Sohne: *See*—
Schuler, Bernhard; and Beck, Ernst, 4,553,411, Cl. 66-123.000.

Thermo King Corporation: *See*—
Taylor, David H., 4,553,403, Cl. 62-239.000.

Theysohn, Rainer: *See*—
Reimann, Horst; Ziegler, Walter; Brandstetter, Franz; Theysohn, Rainer; and Pflueger, Richard, 4,554,320, Cl. 525-183.000.

Thiele, Kurt: *See*—
vonBebenburg, Walter, deceased; Heese, Joachim; Engel, Jurgen; and Thiele, Kurt, 4,554,281, Cl. 514-353.000.
Zirngibl, Ludwig; and Thiele, Kurt, 4,554,356, Cl. 548-341.000.

Thies, Peter: *See*—
Fudickar, Harald; and Thies, Peter, 4,554,043, Cl. 156-502.000.

Thomann, Roland; and Amann, Markus, to Polydrain, Inc. Slotted drainage grate with support. 4,553,874, Cl. 404-4.000.

Thomas, David L.: *See*—
Swain, James C.; and Thomas, David L., 4,553,905, Cl. 417-222.000.

Thompson, David S.; and Scott, Darwin H., to United States of America, Energy. Aluminum battery alloys. 4,554,131, Cl. 420-546.000.

Thompson, William E.: *See*—
Perrella, Guido; and Thompson, William E., 4,553,583, Cl. 164-458.000.

Thomson-CSF: *See*—
Arques, Marc, 4,554,571, Cl. 357-24.000.
Baer, Jean-Michel, 4,554,518, Cl. 333-33.000.
Deman, Pierre; and Butin, Henri, 4,554,668, Cl. 375-1.000.
Deman, Pierre; and Butin, Henri, 4,554,669, Cl. 375-1.000.
Fleuret, Daniel, 4,553,304, Cl. 29-25.420.
Malissin, Roland; and Monlouis, Claude, 4,554,653, Cl. 369-45.000.
Parniere, Alain; and Bazenant, Dominique, 4,554,517, Cl. 332-18.000.
Pham van Cang, Luc, 4,554,663, Cl. 371-20.000.

Thorsbakken, Arden L. Tamper indicating container safety cover. 4,553,678, Cl. 215-218.000.

Thyssen Industrie Aktiengesellschaft: *See*—
Harder, Helmut, 4,553,720, Cl. 244-137.00P.

Tibbet Incorporated: *See*—
Bechstein, Bradley L., 4,553,365, Cl. 52-483.000.

Tie-Tite Products, Incorporated: *See*—
Blum, Ronald D., 4,553,293, Cl. 24-119.000.

Tillyard, Malcolm: *See*—
Hanson, Raymond; and Tillyard, Malcolm, 4,553,341, Cl. 34-236.000.

Tischer, Werner; Liebert, Karl-Heinz; and Fassbender, Rolf, to Zahnradfabrik Friedrichshafen, AG. Hydrostatic auxiliary steering apparatus. 4,553,389, Cl. 60-384.000.

Tischer, Werner: *See*—
Liebert, Karl-Heinz; Tischer, Werner; and Fassbender, Rolf, 4,553,390, Cl. 60-384.000.

Tisdale, Stephen L.: *See*—
Bupp, James R.; Lemon, Gary K.; Markovich, Voya; Sambucetti, Carlos J.; Tisdale, Stephen L.; and Trevitt, Donna J., 4,554,182, Cl. 427-304.000.

Tkachuk, Peter R., to United States of America, Navy. Dynamic pressure test unit-ratio method. 4,553,425, Cl. 73-37.000.

Tobe, Kazumitsu, to Canon Kabushiki Kaisha. Video signal recording apparatus. 4,554,602, Cl. 360-14.200.

Toben, John J.: *See*—
Stoehr, Herbert M.; and Toben, John J., 4,553,418, Cl. 72-132.000.

Todoh, Hidemasa: *See*—
Kimoto, Toshifumi; Todoh, Hidemasa; Itami, Teruhiko; and Saitoh, Koichi, 4,554,557, Cl. 346-74.400.

Todokoro, Hideo; and Fukuhara, Satoru, to Hitachi, Ltd. Potential analyzer. 4,554,455, Cl. 250-305.000.

Tokai Rubber Industries Ltd.: *See*—
Konishi, Keizo; Yonehama, Teruo; and Yamamoto, Takao, 4,553,744, Cl. 267-140.100.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Hayashi, Masakazu, 4,554,580, Cl. 358-107.000.
Iida, Kazuhiko, 4,554,638, Cl. 364-521.000.
Koike, Hideharu, 4,554,465, Cl. 307-269.000.
Mosholder, Michael, 4,553,826, Cl. 355-3.0FU.
Ooi, Kazushige; Fujiwara, Shigekazu; Yoshida, Nobuaki; and Sukegawa, Tsuneo, 4,554,587, Cl. 358-228.000.
Segawa, Makoto; and Ariizumi, Shoji, 4,554,469, Cl. 307-482.000.
Sera, Michitoshi, 4,554,126, Cl. 264-272.170.
Sounai, Atuo; and Murata, Kenji, 4,554,225, Cl. 429-34.000.
Tanuma, Chiaki; Yokoyama, Katsunori; and Suda, Yoshiyuki, 4,554,586, Cl. 358-213.000.

Tolcon Steel Corporation: *See*—
Willoughby, Marshall O., 4,553,479, Cl. 102-430.000.

Tolok, Vladimir T.: *See*—
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; Sinelschikov, Andrei K.; and Tolok, Vladimir T., 4,554,201, Cl. 428-215.000.

Tomazic, Gerd: *See*—
Schreier, Kurt; Bartsch, Karl; Knoll, Helmut; and Tomazic, Gerd, 4,554,041, Cl. 156-276.000.

Tomio, Wada: *See*—
Ishii, Yutaka; Funada, Fumiaki; Takamatsu, Toshiaki; and Tomio, Wada, 4,553,821, Cl. 350-339.00R.

Tomioka, Isao: *See*—
Imahori, Kazutomo; Iwasaki, Tatsuo; Nakajima, Hiroshi; Kondo, Hitoshi; Tomioka, Isao; Kashima, Masaru; and Tsukamoto, Toshihiko, 4,554,253, Cl. 435-288.000.

Tomono, Makoto: *See*—
Itaya, Masahiko; Haneda, Satoshi; and Tomono, Makoto, 4,553,500, Cl. 118-657.000.

Tomy Kogyo Corporation, Inc.: *See*—
Weiland, Herbert; Nuttall, Michael; and Kozuka, Michihiro, 4,553,947, Cl. 446-443.000.

Toothaker, David L., to Tweco Products, Inc. Welding conduit stop. 4,554,433, Cl. 219-137.630.

Topping, Donald G. Mounting means for bow stabilizers. 4,553,522, Cl. 124-89.000.

Topre Corporation: *See*—
Ichikawa, Isamu; Fukushi, Yutaka; Kamata, Keiji; and Suzuki, Hikoshiro, 4,553,696, Cl. 236-49.000.

Toth, Istvan: *See*—
Farkas, Tibor; Vigh, Laszlo ; Horvath, Ibolya; Nagy nee Vanicsek, Aniko ; Foglein, Ferenc; Meszaros, Annamaria; and Toth, Istvan, 4,554,252, Cl. 435-240.000.

Toth, John F.: *See*—
Fassett, Matthew; Toth, John F.; Lewis, Michael L.; and Miccioli, William F., 4,554,549, Cl. 343-700.0MS.

Touma, Teruo: *See*—
Kumasaka, Osamu; and Touma, Teruo, 4,554,655, Cl. 369-275.000.

Tove, Per-Arne; Bohlin, Kjell; Stolt, Lars; and Norde, Herman. Integrated electron circuits having Schottky field effect transistors of P- and N-type. 4,554,569, Cl. 357-15.000.

Townsend, Dana R.: *See*—
Faure, Louis H.; Townsend, Dana R.; and Walsh, Thomas J., 4,554,506, Cl. 324-158.00P.

Townsend, Greg M.: *See*—
Marten, Russell A.; and Townsend, Greg M., 4,554,658, Cl. 370-85.000.

Toy, Frank C. Information monitoring and notification method and apparatus. 4,554,418, Cl. 179-2.0DP.

Toyama, Haruji: *See*—
Chiba, Iwane; Fujiwara, Junji; Kuwamoto, Hiroshi; izushi, Tomoya; Muto, Toshimi; and Toyama, Haruji, 4,554,087, Cl. 252-49.900.

Toyo Kako Kabushiki Kaisha: *See*—
Nakada, Morihito, 4,553,562, Cl. 137-375.000.

Toyo Seikan Kaisha. Ltd.: *See*—
Terajima, Yoshimi; Akitoshi, Hiroshi; and Nagatani, Nobuaki, 4,553,693, Cl. 229-7.00S.
Tsurumaru, Michiko; Nakazato, Seiichi; Nunokawa, Atsushi; Ueno, Hiroshi; and Kobayashi, Seishichi, 4,553,682, Cl. 220-75.000.

Toyo Soda Manufacturing Co. Ltd.: *See*—
Arika, Junji; Shiota, Eiji; and Yamamoto, Kazuaki, 4,554,211, Cl. 428-402.000.
Fujimoto, Teruo; Isono, Yoshinobu; and Miyaki, Yoshiyuki, 4,554,376, Cl. 562-554.000.
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,012, Cl. 71-92.000.
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,015, Cl. 71-100.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Sakurai, Shigenori; Kamo, Takashi; and Kimura, Shirou, 4,553,424, Cl. 73-27.00R.
Shinoda, Kazuo, 4,554,634, Cl. 364-431.100.
Yoshida, Seiki, 4,553,896, Cl. 414-495.000.

Tozzolino, Pierre: *See*—
Maurice, Jacques; Guesnet, Patrice; Tozzolino, Pierre; and Muller, Guy, 4,554,137, Cl. 423-26.000.

Traylor, Paul L. Backflush coupling and method for internal combustion engine cooling system. 4,553,587, Cl. 165-95.000.

Trenkler, Werner, to Dr. Ing. h.c.F. Porsche AG. Linkage arrangement for a convertible top. 4,553,784, Cl. 296-107.000.

Trevino, Edward: *See*—
Hess, Edward C.; and Trevino, Edward, 4,553,309, Cl. 29-450.000.

Trevitt, Donna J.: *See*—
Bupp, James R.; Lemon, Gary K.; Markovich, Voya; Sambucetti, Carlos J.; Tisdale, Stephen L.; and Trevitt, Donna J., 4,554,182, Cl. 427-304.000.

Triumph-Adler Aktiengesellschaft fur Buro-Informationstechnik: *See*—
Lendl, Joseph, 4,553,861, Cl. 400-120.000.

Trout, George E.: *See*—
Weidler, Charles H.; and Trout, George E., 4,553,808, Cl. 339-97.00R.

Trutzschler GmbH & Co. KG: *See*—
Knappertz, Walter P., 4,553,882, Cl. 406-181.000.

TRW Inc.: *See*—
Allard, Ira L., 4,554,038, Cl. 156-196.000.

Tsai, Jen-Fa. Mousetrap. 4,553,349, Cl. 43-70.000.

Tsuchiya, Eiichi, to Victor Company of Japan, Ltd. Adapter for a miniature type tape cassette. 4,554,603, Cl. 360-94.000.

Tsuge, Noboru; and Taguchi, Masahiro, to Nippon Soken, Inc. Automobile seat belt system with automatic unlocking function. 4,553,625, Cl. 180-268.000.

Tsuji, Nobuo: *See*—
Yamamoto, Nobuyuki; Ryoke, Katsumi; Tsuji, Nobuo; Higaki, Yuzo; and Okamura, Toshihisa, 4,554,220, Cl. 428-694.000.

Tsuji, Toshinori: *See*—
Yamamoto, Mitsuo; Kinumoto, Namio; Tsuji, Toshinori; and Hiraoka, Tutomu, 4,554,178, Cl. 427-140.000.

Tsujimoto, Yoshinobu: *See*—
Taniuchi, Tetsuo; and Tsujimoto, Yoshinobu, 4,554,449, Cl. 250-227.000.

Tsukada, Masamichi: *See*—
Nogami, Taro; and Tsukada, Masamichi, 4,553,840, Cl. 356-333.000.

Tsukada, Masamitsu: *See*—
Kamei, Ryosuke; Kobayashi, Keiitsu; Nakamura, Akira; Shimamura, Toshikazu; Tsukada, Masamitsu; and Ono, Hisashi, 4,554,202, Cl. 428-225.000.

Tsukada, Toshihisa: *See*—
Shimomoto, Yasuharu; Tanaka, Yasuo; Takasaki, Yukio; Ishioka, Sachio; Tsukada, Toshihisa; and Baji, Toru, 4,554,478, Cl. 313-366.000.

Tsukamoto, Goro: *See*—
Takebe, Yasushi; Iuchi, Koji; and Tsukamoto, Goro, 4,554,358, Cl. 549-229.000.

Tsukamoto, Toshihiko: *See*—
Imahori, Kazutomo; Iwasaki, Tatsuo; Nakajima, Hiroshi; Kondo, Hitoshi; Tomioka, Isao; Kashima, Masaru; and Tsukamoto, Toshihiko, 4,554,253, Cl. 435-288.000.

Tsuneno, Hiroshi: *See*—
Yamamoto, Hideharu; and Tsuneno, Hiroshi, 4,554,573, Cl. 357-73.000.

Tsunoda, Yoshito: *See*—
Maeda, Takeshi; Tsunoda, Yoshito; Huno, Takakazu; Takasago, Masahiro; and Mizoguchi, Yasumitsu, 4,554,652, Cl. 369-44.000.

Tsurumaru, Michiko; Nakazato, Seiichi; Nunokawa, Atsushi; Ueno, Hiroshi; and Kobayashi, Seishichi, to Toyo Seikan Kaisha, Ltd. Bonded can of key-opening type and process for production thereof. 4,553,682, Cl. 220-75.000.

Tsutsumi, Hideo: *See*—
Takaya, Takao; Yasuda, Nobuyoshi; Tsutsumi, Hideo; and Matsuda, Keiji, 4,554,269, Cl. 514-35.000.

Tsutsumi, Suteo; and Koh, Hiroshi, to Fujitec Co., Ltd. Monitoring system for a predetermined field of view. 4,554,459, Cl. 250-550.000.

Tsuzuki, Kenji: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,012, Cl. 71-92.000.
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,015, Cl. 71-100.000.

Tucker, Abraham I.; and Spelber, Leonard G., to Wastemate Corporation. Anti-siphon control valve. 4,553,560, Cl. 137-218.000.

Tumey, Michael L.: *See*—
Husman, James R.; Kellen, James N.; McCluney, Rebecca E.; and Tumey, Michael L., 4,554,324, Cl. 525-301.000.

Tunac, Josefino B.: *See*—
Young, Cynthia A.; Schaumberg, John P.; Hokanson, Gerard C.; French, James C.; and Tunac, Josefino B., 4,554,162, Cl. 424-117.000.

Tung, Thomas T.: *See*—
McHenry, Robert J.; Pfutzenreuter, Henry, III; Tung, Thomas T.; and Vella, John, Jr., 4,554,190, Cl. 428-35.000.

Turbitt, David M.; and Archibald, James F. Density classification of particulate materials by elutriation methods and apparatus. 4,554,066, Cl. 209-3.000.

Turner, Edward W.; Blake, Peter J.; and Strzegowski, Joseph C., Jr., to Hardigg Industries, Inc. Size trimmer. 4,553,464, Cl. 83-865.000.

Tweco Products, Inc.: *See*—
Toothaker, David L., 4,554,433, Cl. 219-137.630.

Tye, Ronald G., to Minnesota Mining and Manufacturing Co. Electrical switch. 4,554,424, Cl. 200-86.00R.

Tyer, Robert C., to Rockland, Inc. Implement snubbing device. 4,553,778, Cl. 294-86.400.

Tyler, David O., to General Motors Corporation. Adjustable lamp assembly. 4,554,617, Cl. 362-61.000.

Tyszkiewicz, Theodore J.: *See*—
Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., 4,554,095, Cl. 252-522.00R.

Uberbacher, Edward C.: *See*—
Bahl, Andrew L.; Stilwell, George R., Jr; Uberbacher, Edward C.; and Williamson, Charles A., 4,553,814, Cl. 350-96.210.

Uchida, Yoshihisa; and Yamashita, Kazuichi, to Matsushita Electric Industrial Co., Ltd. Toroidal core winding method and apparatus. 4,553,705, Cl. 242-4.00R.

Uchino, Kenju; and Sakai, Tomoo, to Mitutoyo Mfg. Co., Ltd. Dial indication type measuring instrument. 4,553,329, Cl. 33-147.00T.

Uchiyama, Masaki: *See*—
Imai, Eiichi; Takenouchi, Masanori; Uchiyama, Masaki; and Suematsu, Koshi, 4,554,234, Cl. 430-122.000.

Ueda, Yutaka: *See*—
Matsui, Isamu; and Ueda, Yutaka, 4,553,708, Cl. 242-36.000.

Ueno, Hiroshi: *See*—
Tsurumaru, Michiko; Nakazato, Seiichi; Nunokawa, Atsushi; Ueno, Hiroshi; and Kobayashi, Seishichi, 4,553,682, Cl. 220-75.000.

Ueno, Masato, to Kyocera Corporation. Apparatus for waxing-up. 4,553,935, Cl. 433-32.000.

Uetani, Kenichi, to Mitsubishi Denki Kabushiki Kaisha. Elevator supervision system. 4,553,639, Cl. 187-29.00R.

Uliczka, Wolfgang: *See*—
Strobl, Otto; Blien, Harry; and Uliczka, Wolfgang, 4,553,289, Cl. 19-161.100.

Ullenboom, Hermann, to Siemens Aktiengesellschaft. Method and arrangement for tolerance compensation in matrix printing devices. 4,553,863, Cl. 400-121.000.

Ultra-Temp Corporation: *See*—
Lueth, Roy C., 4,554,441, Cl. 219-552.000.

Umemura, Shizuo; and Kitamoto, Tatsuji, to Fuji Photo Film Co., Ltd. Ferromagnetic particles with stable magnetic characteristics and method of preparing same. 4,554,089, Cl. 252-62.560.

Uniderm Farmaceutici s.n.c.: *See*—
Chiozza, Enrico, 4,553,536, Cl. 128-130.000.

Union Carbide Corporation: *See*—
Fuderer, Andrija, 4,553,981, Cl. 48-62.00R.
Messina, Celeste A.; Lok, Brent M.; and Flanigen, Edith M., 4,554,143, Cl. 423-306.000.
Ramamurthy, Arakalgud V., 4,554,120, Cl. 264-85.000.

Union Special GmbH: *See*—
Jurgens, Erwin F., 4,553,492, Cl. 112-227.000.

Unipart Group Limited: *See*—
Lardner, Graham G., 4,553,586, Cl. 165-76.000.

Uniroyal, Inc.: *See*—
Hunter, Byron A.; Rowland, Donald G.; and Peascoe, Warren J., 4,554,294, Cl. 521-93.000.

United McGill Corporation: *See*—
Panza, Michael J., 4,553,631, Cl. 181-291.000.

United States of America
Agriculture: *See*—
Lest, William L., 4,554,442, Cl. 235-88.00R.

Air Force: *See*—
Eitel, Frederick G., 4,553,457, Cl. 82-1.00C.
Goldfarb, Harold; Perkins, Kenneth L.; and Weigand, Bernard L., 4,553,435, Cl. 73-40.700.
Pacini, Dino J.; Miceli, Edward C.; and Sturdevant, Norman J., Jr., 4,554,416, Cl. 179-170.0NC.
Task, Harry L., 4,554,544, Cl. 340-953.000.
Wyatt, Ivan S.; and Task, Harry L., 4,554,543, Cl. 340-948.000.
Zimmer, James E.; and Salvador, Linda M., 4,554,024, Cl. 106-284.000.

Army: *See*—
Greer, Charles B.; Keehan, Donald W.; and Springer, John A., 4,554,648, Cl. 367-49.000.
Jacobs, Harold; and Dixon, Samuel, Jr., 4,554,680, Cl. 455-326.000.
Saggiomo, Andrew J.; and Nodiff, Edward A., 4,554,279, Cl. 514-311.000.

Energy: *See*—
Aldissi, Mahmoud, 4,554,093, Cl. 252-500.000.
Barclay, John A.; and Dyson, Jack E., 4,553,566, Cl. 137-625.110.
Cookson, Alan H., 4,554,399, Cl. 174-14.00R.
Freund, Samuel M.; Maier, William B., II; Holland, Redus F.; and Beattie, Willard H., 4,554,060, Cl. 204-157.10R.
Peinado, Charles O.; and Koutz, Stanley L., 4,554,129, Cl. 376-298.000.
Thompson, David S.; and Scott, Darwin H., 4,554,131, Cl. 420-546.000.

Interior: *See*—
Lei, Kenneth P. V.; Eisele, Judith A.; and McClelland, Gene E., 4,554,058, Cl. 204-110.000.

National Aeronautics and Space Administration: *See*—
Lee, Mark C., 4,553,917, Cl. 425-6.000.
Ruoff, Carl F., 4,553,393, Cl. 60-528.000.

Navy: *See*—
Baird, J. Mark; Barnett, Larry R.; and Lau, Yue-Ying, 4,554,483, Cl. 315-4.000.
Brown, Douglas E.; and Matthews, William, 4,554,650, Cl. 367-154.000.
Hooper, Ronald; and Nichols, Kenneth, 4,553,439, Cl. 74-5.400.
Olesen, Ralph C.; Sainati, Robert A.; Gropelli, John J., Jr.; and Stanland, Andrew J., 4,554,554, Cl. 343-895.000.
Read, Michael E.; Carmel, Yuval; Chu, Kwo R.; and Ganguly, Achintya K., 4,554,484, Cl. 315-4.000.
Sternberg, Robert L., 4,553,629, Cl. 181-176.000.
Tkachuk, Peter R., 4,553,425, Cl. 73-37.000.

U.S. Philips Corporation: *See*—
Bailleul, Gilles; and Coville, Patrick, 4,554,434, Cl. 219-216.000.
Bertram, Leo; Schemmann, Hugo; and de Boer, Jan, 4,554,471, Cl. 310-49.00R.
Kasperkovitz, Wolfdietrich G., 4,554,503, Cl. 323-315.000.
Lewin, Ian H., 4,554,611, Cl. 361-234.000.
Maassen, Egbertus J. P., 4,553,832, Cl. 355-32.000.
van der Wijst, Hendricus M., 4,554,614, Cl. 361-400.000.
van Gorkom, Gerardus G. P.; and Hoeberechts, Arthur M. E., 4,554,564, Cl. 346-161.000.

United Technologies Corporation: *See*—
Kaminski, Walter R., 4,554,667, Cl. 372-83.000.
Laurello, Vincent P., 4,553,901, Cl. 415-138.000.
Rannenberg, George C., 4,553,407, Cl. 62-402.000.

Unitika Ltd.: *See*—
Imahori, Kazutomo; Iwasaki, Tatsuo; Nakajima, Hiroshi; Kondo, Hitoshi; Tomioka, Isao; Kashima, Masaru; and Tsukamoto, Toshihiko, 4,554,253, Cl. 435-288.000.

Unitron Industries: *See*—
Gastmeier, William J.; and Dohmer, Rolf, 4,553,627, Cl. 181-135.000.

University of Pittsburgh: *See*—
Mears, Dana C., 4,553,272, Cl. 623-1.000.

University of Southern California: *See*—
Whelan, James M., 4,554,150, Cl. 423-491.000.

University of Utah Research Institute: *See*—
Baker, Charles D., 4,553,271, Cl. 623-14.000.

Upchurch, James M., to Schlumberger Technology Corporation. Drill stem testing apparatus with multiple pressure sensing ports. 4,553,428, Cl. 73-152.000.

Upchurch, James M.: *See*—
Meek, Dale E.; and Upchurch, James M., 4,553,598, Cl. 166-317.000.

Upjohn Company, The: *See*—
Braughler, J. Mark; and Hall, Edward D., 4,554,271, Cl. 514-179.000.

Uppgren, John J.; and Scott, James W., to FMC Corporation. Sand mold making machine apparatus and method improvements. 4,553,581, Cl. 164-16.000.

Urion, Kenard E.; and Bressier, Peter, to Scott Paper Company. Modular holder for rolls. 4,553,711, Cl. 242-55.300.

Uryu Seisaku, Ltd.: *See*—
Tatsuno, Koji, 4,553,948, Cl. 464-25.000.

USM Corporation: *See*—
Clark, William S., 4,553,323, Cl. 29-741.000.
Collett, Geoffrey K.; Martin-Jones, Christopher B.; Tapner, Peter N.; Commander, David J.; Gilbey, Mark S.; and Berks, Robert S., 4,553,490, Cl. 112-38.000.
Hanson, Raymond; and Tillyard, Malcolm, 4,553,341, Cl. 34-236.000.

Utah State University Foundation: *See*—
Richardson, Gary H., 4,554,165, Cl. 426-36.000.

Uwotani, Takeshi: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,012, Cl. 71-92.000.
Takematsu, Tetsuo; Konnai, Makoto; Morinaka, Hideo; Nonaka, Yuji; Nakanishi, Akira; Tsuzuki, Kenji; Hashihama, Mitsuyuki; and Uwotani, Takeshi, 4,554,015, Cl. 71-100.000.

Valdespino, Joseph M.; Holcomb, Allen K.; and Hobby, William M. Hemodialysis meter. 4,553,552, Cl. 128-637.000.

Valenza, Frank: *See*—
Rubin, Gene L.; Filipowicz, Anthony H.; and Valenza, Frank, 4,553,344, Cl. 40-152.000.

Valeo: *See*—
Gizard, Michel, 4,553,450, Cl. 74-689.000.

Van Amsterdam, Peter H.: *See*—
Ruijten, Henri M.; De Bree, Hans; Van Amsterdam, Peter H.; and Wiegers, Elbert, 4,554,071, Cl. 210-198.200.

van der Schoot, Jelle, to Staalkat B.V. Apparatus for horizontally and vertically transporting eggs without dropping thereof. 4,553,661, Cl. 198-428.000.

Van der Veen, Johannes F.: *See*—
Haisma, Jan; Larsen, Poul K.; De Jong, Tim; Van der Veen, Johannes F.; Douma, Willem A. S.; and Saris, Frans W., 4,554,030, Cl. 148-175.000.

van der Velden, Hendricus J., to Stork Screens B.V. Method of forming a printing sleeve. 4,554,040, Cl. 156-215.000.

van der Wijst, Hendricus M., to U.S. Philips Corporation. Electric circuit assembly comprising a printed wiring board. 4,554,614, Cl. 361-400.000.

van Gorkom, Gerardus G. P.; and Hoeberechts, Arthur M. E., to U.S. Philips Corporation. Semiconductor device and method of manufacturing same, as well as a pick-up device and a display device having such a semiconductor device. 4,554,564, Cl. 346-161.000.

Vardo, Jean-Claude: *See*—
Noirel, Yves M.; Vardo, Jean-Claude; and Chevee, Gerard, 4,554,660, Cl. 370-94.000.

Vargo, William R. Steel shelving mounting clip and shelving structure. 4,553,725, Cl. 248-221.300.

Varker, Kenneth J., to International Business Machines Corporation. High density encapsulated wire circuit board. 4,554,405, Cl. 174-68.500.

Varrichio, Anthony J.; and Gordon, Pat L., to Neuromedics, Inc. Interrogator for muscle stimulator. 4,553,548, Cl. 128-421.000.

Vasilchenko, Georgy A.; and Alexeev, Leonid I. Spindle headstock. 4,553,886, Cl. 409-233.000.

Vaubel, Ekkehard: *See*—
Fischer, Herbert; Kickhofen, Botho; and Vaubel, Ekkehard, 4,554,156, Cl. 424-81.000.

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Verbicky, John W., Jr.; and O'Neil, Elbridge A., Jr., to General Electric Company. Bis-quaternary salts as phase transfer catalysts for aromatic ether imide preparation. 4,554,357, Cl. 548-461.000.

Verbrugge, Pieter A., to Shell Oil Company. Esters of 1,5-dimethyl bicyclo [3.2.1] octan-8-ol. 4,554,109, Cl. 260-457.000.

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Vereschaka, Anatoly S.: *See*—
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Vicic, John C. Ram-type blowout preventer and packer therefor. 4,553,730, Cl. 251-1.300.

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Viitanen, Veikko K.; and Kreamer, William C., to FMC Corporation. Method and apparatus for packaging articles such as fruit. 4,553,373, Cl. 53-441.000.

Villarreal, Raul M. Machine and process for grinding granular particles. 4,553,703, Cl. 241-24.000.

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Bogese, Charles E., 4,553,800, Cl. 339-59.00M.

Vitus, Francis J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., to GenCorp Inc. Star-shaped polymers for improved tire treads. 4,553,578, Cl. 152-209.00R.

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Votteler, Arno; Lanuzzi, Max; Dubach, Fredi; and Schreiner, Herbert, to Planmobel Eggersmann GmbH & Co. KG. Worktable, especially office table. 4,553,483, Cl. 108-4.000.

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Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; Sinelschikov, Andrei K.; and Tolok, Vladimir T., 4,554,201, Cl. 428-215.000.

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Wachi, Sadayuki; Ohiwa, Kenichi; Shimada, Yasuo; and Hino, Takao, to Sumitomo Metal Industries, Ltd. Heat-resisting furnace roll. 4,553,931, Cl. 432-246.000.

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Walter, Bruno H. Intermittently rotatable down hole drilling tool, thrust bearing for use therein and method of assembly of such thrust bearing. 4,553,859, Cl. 384-95.000.

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Wang, Wu-Lan, to Dentsply Research & Development Corp. Dental impression tray and method of use. 4,553,936, Cl. 433-37.000.

Ward, William J., III; Ritzer, Alan; and Lapidot, Heine, to General Electric Company. Method for making alkylhalosilanes. 4,554,370, Cl. 556-472.000.

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Young, Cynthia A.; Schaumberg, John P.; Hokanson, Gerard C.; French, James C.; and Tunac, Josefino B., 4,554,162, Cl. 424-117.000.

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Watanabe, Katsunori: *See*—
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Watanabe, Yosio. Ruler device for use in marking-off. 4,553,327, Cl. 33-32.00B.

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Weber, Klaus, to Extraktionstechnik Gesellschaft Fur Anlagenbau mbH. Method of continuous extraction of particulate solid material. 4,554,163, Cl. 424-195.100.

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Weiland, Herbert; Nuttall, Michael; and Kozuka, Michihiro, to Tomy Kogyo Corporation, Inc. Shifting mechanism for motorized toy. 4,553,947, Cl. 446-443.000.

Weinar, Roger N. Outside wallboard corner construction and edging member for said corners. 4,553,363, Cl. 52-288.000.

Weinert, Friedrich. Spindle drive with expansible chamber motors. 4,553,394, Cl. 60-530.000.

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Welch, Robert A.: *See*—
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Wells, Harold D.: *See*—
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Wells, William T. Free-standing stove and fireplace apparatus. 4,553,528, Cl. 126-123.000.

Wenger, Roland, to Sandoz Ltd. Method for the total synthesis of cyclosporins, novel cyclosporins and novel intermediates and methods for their production. 4,554,351, Cl. 544-177.000.

Wengrovius, Jeffrey H.; and Niedrach, Leonard W., to General Electric Company. Room temperature vulcanizable organopolysiloxane compositions and method for making. 4,554,310, Cl. 524-715.000.

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West, James F., to McCulloch Corporation. Chain saw braking system. 4,553,326, Cl. 30-381.000.

West, Michael D., to International Telephone and Telegraph Corporation. Zone control valve. 4,553,733, Cl. 251-291.000.

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Western Packaging Systems, Ltd.: *See*—
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Westinghouse Electric Corp.: *See*—
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Bieneman, Matthew J., 4,554,538, Cl. 340-799.000.
Ciliberti, David F.; and Lippert, Thomas E., 4,553,986, Cl. 55-68.000.
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Fell, Edwin H., 4,553,334, Cl. 33-181.00R.
Flick, Robert H.; and Dennis, Lawrence D., 4,554,423, Cl. 200-293.000.
Flick, Robert H.; and Huffman, Walter K., 4,554,427, Cl. 200-250.000.
Golub, Gregory J., 4,554,420, Cl. 200-11.0TC.
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Martin, Frank E., 4,553,815, Cl. 350-96.230.
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Parker, Merle A.; Rice, George F.; and Patrick, Stanley S., 4,554,128, Cl. 376-252.000.
Radus, Raymond J., 4,554,524, Cl. 337-3.000.
Wolf, Charles B.; and George, Joseph W., 4,554,435, Cl. 219-383.000.

Whartenby, James C.; and Kumar, Mahesh, to RCA Corporation. Predistortion circuit with feedback. 4,554,514, Cl. 330-149.000.

Wheat, Don R.; and Coers, Don H. Portable cooking and barbecuing device. 4,553,524, Cl. 126-25.00R.

Whelan, James M., to University of Southern California. Detector grade mercuric iodide. 4,554,150, Cl. 423-491.000.

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Whirlpool Corporation: *See*—
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White Consolidated Industries, Inc.: *See*—
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White, Maurice J. E. Dental product and method of dental treatment. 4,554,154, Cl. 424-16.000.

Whitehead, Roy A.; Chagnon, Mark S.; Groman, Ernest V.; and Josephson, Lee, to Advanced Magnetics Inc. Magnetic particles for use in separations. 4,554,088, Cl. 252-62.540.

Whitford, James C., to Eagle-Picher Industries, Inc. Impregnation of nickel electrodes using electric pH control circuits. 4,554,056, Cl. 204-2.100.

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Wickham, Thomas D.; and Monson, Wayne R., to Harsco Corporation. Railroad measuring, gauging and spiking apparatus. 4,554,624, Cl. 364-148.000.

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Wiggs, Christopher C.; and Taylor, Christopher J. Bead puzzle. 4,553,754, Cl. 273-153.00S.

Wigley, Albert F. Moisture eliminator. 4,553,993, Cl. 55-440.000.

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Wilcox, Charles F. Disc brake for trucks. 4,553,643, Cl. 188-71.900.

Wilcox, Melvin S.; and Schwerin, Vernon L. Nut starter with special blades. 4,553,455, Cl. 81-443.000.

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Wilkerson, James W. Staple throat for stapling machine. 4,553,689, Cl. 227-139.000.

Willemse, Kees; Meek, Jan; and Michelsen, Finn C., to Heerema Engineering Service. Offshore tower constructions and methods of erection and installation thereof. 4,553,878, Cl. 405-203.000.

William D. Miller, Inc.: *See*—
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Williams, Arlene G., to General Electric Company. Organoaluminosiloxane coating compositions and coated substrate. 4,554,186, Cl. 427-387.000.

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Tentler, Michael; Walker, David L.; Bretl, Wayne E.; and Williams, Gregory A., 4,554,581, Cl. 358-120.000.

Williams, James M.: *See*—
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Williams, Michael R.: *See*—
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Williams, Rodger W.; and Atwood, Charles W., to Alcon Laboratories, Inc. Irrigation/aspiration handpiece. 4,553,957, Cl. 604-43.000.

Williams, Ronald K.: *See*—
Lam, Kin C.; and Williams, Ronald K., 4,553,955, Cl. 494-16.000.

Williamson, Charles A.: *See*—
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Willis, Donald H., to RCA Corporation. Error compensated control system in a video signal processor. 4,554,578, Cl. 358-65.000.

Willoughby, Marshall O., to Tolcon Steel Corporation. Plastic bullet. 4,553,479, Cl. 102-430.000.

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Wilson, Robert R.; and Falconer, Roy D., to James Howden & Company Limited. Pulverizing apparatus. 4,553,704, Cl. 241-39.000.

Wine, Charles M., to RCA Corporation. Apparatus for synchronizing a source of computer controlled video to another video source. 4,554,582, Cl. 358-149.000.

Wingard, Michael G.; and Peterson, John F. D., to BASF Wyandotte Corporation. Immiscible liquid collector and method of operation. 4,554,079, Cl. 210-776.000.

Winkler, Otmar: *See*—
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Winner, Eduard. Apparatus for processing material. 4,553,922, Cl. 425-381.200.

Winter, Rudolph R.; and Propst, Verle V., to Borg-Warner Corporation. System to automatically change tool blocks used on turning machines. 4,553,313, Cl. 29-568.000.

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Witman, Mark W.: *See*—
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Wohnsdorf, Manfred: *See*—
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Wolf, Gerhard D.: *See*—
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Worthington, Ralph E.; and Magdics, Alex, to Prodeco, Inc. Process for producing and decomposing syngenite. 4,554,139, Cl. 423-166.000.

Worthington, Ralph E.; Magdics, Alex; and Stain, Donald B., to Prodeco, Inc. Process for producing $K_3H(SO_4)_2$ crystals and potassium sulfate crystals. 4,554,151, Cl. 423-551.000.

Woyton, Joseph T., to Reliance Electric Company. Shaft alignment device. 4,553,335, Cl. 33-181.00R.

Wright, Bruce R., to Associated Equipment Corporation. Rectifier assembly for parallel connection of diodes. 4,554,574, Cl. 357-74.000.

Wright, Douglas C., to Mineral Deposits Ltd. Method and apparatus for obtaining undercuts of concentrates from pulp flow in spiral separators. 4,553,673, Cl. 209-697.000.

Wu, Kent K., to Henry Ford Hospital. Vertebral body prosthesis and spine stabilizing method. 4,553,273, Cl. 623-18.000.

Wuest, Rainer: *See*—
Bofinger, Gerd; Stelter, Norbert; and Wuest, Rainer, 4,553,654, Cl. 192-0.076.

Wurminghausen, Thomas: *See*—
Grape, Wolfgang; Saykowski, Franz; Schlak, Ottfried; and Wurminghausen, Thomas, 4,554,187, Cl. 427-387.000.

Wyatt, Ivan S.; and Task, Harry L., to United States of America, Air Force. Glide slope indicator system. 4,554,543, Cl. 340-948.000.

Wynen, Gerrard A.: *See—*
Armstrong, Timothy J.; and Wynen, Gerrard A., 4,553,633, Cl. 182-3.000.
Xerox Corporation: *See—*
Bares, Jan, 4,553,829, Cl. 355-3.0DD.
Burger, William R.; Hutton, James E.; and Silverberg, Morton, 4,553,828, Cl. 355-3.0BE.
Daniele, Joseph J.; and Yip, Kwok-leung, 4,554,561, Cl. 346-108.000.
Dixon, Barry M., 4,553,831, Cl. 355-26.000.
Foley, Geoffrey M. T.; and Enck, Rudolph C., 4,554,230, Cl. 430-58.000.
Nguyen, Tuan A., 4,553,830, Cl. 355-14.00R.
Yabunaka, Kiyoshi: *See—*
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Tanaka, Toshinori; and Yabunaka, Kiyoshi, 4,553,441, Cl. 74-7.00R.
Yagihara, Morio: *See—*
Ohno, Shigeru; Kishimoto, Shinzo; and Yagihara, Morio, 4,554,242, Cl. 430-393.000.
Yaji, Motoyasu; Shimizu, Masuto; Yamanaka, Hiromitsu; and Koshikawa, Takao, to Kawasaki Steel Corporation. Method of controlling continuous casting equipment. 4,553,604, Cl. 164-453.000.
Yamada, Magoichi, to Daiwa Golf Co., Ltd. Golf club head. 4,553,755, Cl. 273-171.000.
Yamada, Shigeo: *See—*
Takawashi, Tamio; Sakakibara, Toshimitsu; and Yamada, Shigeo, 4,554,428, Cl. 219-69.00G.
Yamada, Shigeru: *See—*
Kawashima, Susumu; and Yamada, Shigeru, 4,553,465, Cl. 84-1.030.
Yamada, Takahiro, to Matsushita Electric Industrial Co., Ltd. Solid-state image display device. 4,554,485, Cl. 315-169.300.
Yamada, Takao: *See—*
Matsumoto, Akio; and Yamada, Takao, 4,553,851, Cl. 368-205.000.
Yamada, Takeo; Harada, Naoki; and Imai, Kiyotaka, to Nippon Kokan Kabushiki Kaisha. Method for continuously measuring surface temperature of heated steel strip. 4,553,854, Cl. 374-129.000.
Yamagami, Hiroyuki: *See—*
Hayashi, Yasuhiro; Deguchi, Naoyasu; Yamagami, Hiroyuki; Goda, Kensuke; and Hasebe, Kazunori, 4,554,245, Cl. 430-567.000.
Yamagata, Kenji: *See—*
Moriyama, Yoshiaki; and Yamagata, Kenji, 4,554,529, Cl. 340-347.0DD.
Yamamoto, Albert K., to Rexnord Inc. Removal tool for tangless, helically coiled insert. 4,553,303, Cl. 29-240.500.
Yamamoto, Albert K.: *See—*
Cosenza, Frank J.; and Yamamoto, Albert K., 4,553,302, Cl. 29-240.500.
Yamamoto, Hideharu; and Tsuneno, Hiroshi, to Hitachi, Ltd. Glass-sealed ceramic package type semiconductor device. 4,554,573, Cl. 357-73.000.
Yamamoto, Kazuaki: *See—*
Arika, Junji; Shiota, Eiji; and Yamamoto, Kazuaki, 4,554,211, Cl. 428-402.000.
Yamamoto, Mitsuo; Kinumoto, Namio; Tsuji, Toshinori; and Hiraoka, Tutomu, to Osaka Gas Company. Method of internally coating pipeline. 4,554,178, Cl. 427-140.000.
Yamamoto, Nobuyuki; Ryoke, Katsumi; Tsuji, Nobuo; Higaki, Yuzo; and Okamura, Toshihisa, to Fuji Photo Film Co., Ltd.; and Nisshin Oil Mills, Ltd. Magnetic recording media. 4,554,220, Cl. 428-694.000.
Yamamoto, Shigeo: *See—*
Funaki, Yuji; Oshita, Hirofumi; Yamamoto, Shigeo; Tanaka, Shizuya; and Kato, Toshiro, 4,554,007, Cl. 71-076.000.
Yamamoto, Takao: *See—*
Konishi, Keizo; Yonehama, Teruo; and Yamamoto, Takao, 4,553,744, Cl. 267-140.100.
Yamamuro, Kiyohiko; Iwasa, Yasuo; and Itoh, Isamu, to Fuji Photo Film Co., Ltd. Photographic silver halide light-sensitive material. 4,554,246, Cl. 430-611.000.
Yamanaka, Hiromitsu: *See—*
Yaji, Motoyasu; Shimizu, Masuto; Yamanaka, Hiromitsu; and Koshikawa, Takao, 4,553,604, Cl. 164-453.000.
Yamashita, Kazuichi: *See—*
Uchida, Yoshihisa; and Yamashita, Kazuichi, 4,553,705, Cl. 242-4.00R.
Yamashita, Kiyotoshi; Ishikawa, Minoru; Ohta, Hideo; and Kumashiro, Kenji, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic material. 4,554,247, Cl. 430-622.000.
Yamauchi, Mineo; and Karahashi, Yoshimitu, to Mitutoyo Mfg. Co., Ltd. Micrometer. 4,553,330, Cl. 33-164.00R.
Yamazaki, Yasuo; Suzuki, Takehiko; Shimizu, Isoo; and Matsumura, Yasuo, to Nippon Petrochemicals Company, Limited. Process for converting aromatic compounds. 4,554,360, Cl. 549-261.000.
Yano, Motoichi: *See—*
Sakano, Hajime; Ito, Akitoshi; Yano, Motoichi; Honda, Yasuhiro; and Fujiwara, Takayoshi, 4,554,316, Cl. 525-71.000.
Yano, Takemithu: *See—*
Fuchikami, Jun; and Yano, Takemithu, 4,554,263, Cl. 502-66.000.
Yano, Yoshiki; and Kawaguchi, Yuji, to Honda Giken Kogyo Kabushiki Kaisha. Cylinder head for internal combustion engines. 4,553,510, Cl. 123-90.340.
Yardley, James T.: *See—*
Gupta, Arunava; and Yardley, James T., 4,554,291, Cl. 518-700.000.
Yasuda, Nobuyoshi: *See—*
Takaya, Takao; Yasuda, Nobuyoshi; Tsutsumi, Hideo; and Matsuda, Keiji, 4,554,269, Cl. 514-35.000.
Yates, Donald B., to Pullman Standard Inc. Brake arrangement for single axle wheel truck of railway car. 4,553,642, Cl. 188-56.000.
Yeakey, Ernest L.: *See—*
Sanderson, John R.; Yeakey, Ernest L.; and Lin, Jiang-Jen, 4,554,364, Cl. 549-453.000.
Yeskel, Filip J.: *See—*
Fox, Sidney J.; Yeskel, Filip J.; and Zimmermann, William J., Jr., 4,554,593, Cl. 358-282.000.
Yi, Chol H. Prying staple remover. 4,553,737, Cl. 254-28.000.
Yip, Kwok-leung: *See—*
Daniele, Joseph J.; and Yip, Kwok-leung, 4,554,561, Cl. 346-108.000.
Yoda, Yasutada; Sueyasu, Seisuke; and Futamura, Shoji, to Bridgestone Corporation; and Institute of Technology & Precision Electrical Discharge Work's. Tire molding mold. 4,553,918, Cl. 425-46.000.
Yohe, David B.: *See—*
Hudson, John E.; and Yohe, David B., 4,553,667, Cl. 206-315.900.
Yokoi, Jun: *See—*
Gaku, Morio; Kimbara, Hidenori; and Yokoi, Jun, 4,554,346, Cl. 528-363.000.
Yokono, Hitoshi: *See—*
Kataoka, Fumio; Shoji, Fusaji; Yokono, Hitoshi; Makino, Daisuke; Koibuchi, Shigeru; and Isobe, Asao, 4,554,237, Cl. 430-197.000.
Yokoyama, Eiji; Kaneko, Tadao; Amano, Yoshiaki; and Sugimoto, Shigeo, to Hitachi, Ltd. Fuel cell apparatus. 4,554,223, Cl. 429-20.000.
Yokoyama, Hiroshi: *See—*
Namba, Yuzuru; Aoyagi, Kenichi; and Yokoyama, Hiroshi, 4,553,514, Cl. 123-308.000.
Yokoyama, Katsunori: *See—*
Tanuma, Chiaki; Yokoyama, Katsunori; and Suda, Yoshiyuki, 4,554,586, Cl. 358-213.000.
Yoneda, Junichi; and Igarashi, Akira, to Fuji Photo Film Co., Ltd. Heat-sensitive recording material. 4,554,566, Cl. 346-207.000.
Yonehama, Teruo: *See—*
Konishi, Keizo; Yonehama, Teruo; and Yamamoto, Takao, 4,553,744, Cl. 267-140.100.
Yoshida Industry Co., Ltd.: *See—*
Hatakeyama, Yoshiharu; and Minosawa, Yoshio, 4,553,679, Cl. 215-232.000.
Yoshida, Nobuaki: *See—*
Ooi, Kazushige; Fujiwara, Shigekazu; Yoshida, Nobuaki; and Sukegawa, Tsuneo, 4,554,587, Cl. 358-228.000.
Yoshida, Seiki, to Toyota Jidosha Kabushiki Kaisha. Truck apparatus for conveying parts. 4,553,896, Cl. 414-495.000.
Yoshida, Tadashi, to Canon Kabushiki Kaisha. Image forming apparatus. 4,554,592, Cl. 358-257.000.
Yoshihara, Tsutomu: *See—*
Yoshimoto, Masahiko; Yoshihara, Tsutomu; Anami, Kenji; and Shinohara, Hirofumi, 4,554,646, Cl. 365-189.000.
Yoshii, Takashi, to Kubota, Ltd. Front-wheel driving apparatus. 4,553,624, Cl. 180-255.000.
Yoshikawa, Hiroshi; Hattori, Tetsuya; and Sato, Hideaki, to Hitachi, Ltd. Casing construction for electronic equipment. 4,553,674, Cl. 211-26.000.
Yoshimoto, Masahiko; Yoshihara, Tsutomu; Anami, Kenji; and Shinohara, Hirofumi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device. 4,554,646, Cl. 365-189.000.
Yoshinari, Yukihiro: *See—*
Kuroki, Yoichi; Yoshinari, Yukihiro; and Hiraga, Ryozo, 4,553,845, Cl. 356-400.000.
Yost, Thomas D.: *See—*
Shanley, Robert L., II; Yost, Thomas D.; and Lagoni, William A., 4,554,577, Cl. 358-34.000.
Young, Cynthia A.; Schaumberg, John P.; Hokanson, Gerard C.; French, James C.; and Tunac, Josefino B., to Warner-Lambert Company. CL-1724 Antibiotic compounds, their production and use. 4,554,162, Cl. 424-117.000.
Young, Harvey T., to American Hospital Supply Corp. Roller clamp controller. 4,553,963, Cl. 604-246.000.
Young, Niels O., to Helix Technology Corporation. Linear motor compressor with pressure stabilization ports for use in refrigeration systems. 4,553,398, Cl. 62-6.000.
Young, Russel L.: *See—*
Schoen, Jerry W.; and Young, Russel L., 4,554,029, Cl. 148-112.000.
Youngers, Stephen A.; and Draney, Robert G., to J. I. Case Company. Dual-rate control assembly. 4,553,448, Cl. 74-480.00R.
Yui, George M. Toilet-bowl bidet apparatus. 4,553,274, Cl. 4-420.400.
Yuki, Heimei; and Okamoto, Yoshio, to Daicel Chemical Industries, Ltd. Polymerizable, optically active polymer and process for preparing polymerizable polymer. 4,554,323, Cl. 525-272.000.
Yuki, Heimei; and Okamoto, Yoshio, to Daicel Chemical Industries, Ltd. Process for preparing optically active polymer. 4,554,334, Cl. 526-177.000.
Yushiro Chemical Industry Co., Ltd.: *See—*
Chiba, Iwane; Fujiwara, Junji; Kuwamoto, Hiroshi; izushi, Tomoya; Muto, Toshimi; and Toyama, Haruji, 4,554,087, Cl. 252-49.900.
Yvan, Schwob, to Association pour la Recherche et le Developpement des Methodes et Processus Industriels. Process for converting ligneous matter of vegetable origin by torrefaction, and product obtained thereby. 4,553,978, Cl. 44-1.00E.
Zachry, Clyde L., to Rockwell International Corporation. Test socket for a leadless chip carrier. 4,554,505, Cl. 324-158.00F.

Zagorski, Joseph B.: *See*—
Finnieston, Alan; and Zagorski, Joseph B., 4,553,535, Cl. 128-88.000.
Zahnraderfabrik Renk A.G.: *See*—
Kirstein, Gerhard, 4,554,451, Cl. 250-237.00G.
Zahnradfabrik Friedrichshafen, AG.: *See*—
Betz, Ansgar, 4,553,447, Cl. 74-422.000.
Liebert, Karl-Heinz; Tischer, Werner; and Fassbender, Rolf, 4,553,390, Cl. 60-384.000.
Merz, Johann, 4,553,908, Cl. 417-310.000.
Tischer, Werner; Liebert, Karl-Heinz; and Fassbender, Rolf, 4,553,389, Cl. 60-384.000.
Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See*—
Schneider, Rudolf, 4,553,653, Cl. 192-18.00B.
Zaitsu, Hiroshi: *See*—
Karashima, Takato; and Zaitsu, Hiroshi, 4,554,606, Cl. 360-131.000.
Zajeski, Robert B., to Panduit Corp. Locking and polarizing header. 4,553,801, Cl. 339-59.00M.
Zapletal, Henry; Wentzek, Horst F.; and Chembakaffery, George M., to Leggett & Platt, Incorporated. Coil spring assembly machine. 4,553,324, Cl. 29-822.000.
Zapletal, Henry; Wentzek, Horst F.; and Chembakaffery, George M., to Leggett & Platt, Incorporated. Coil spring assembly machine. 4,553,572, Cl. 140-92.800.
Zaromb, Solomon. Metal-consuming power generation apparatus and methods. 4,554,222, Cl. 429-19.000.
Zeeh, Bernd; Ammermann, Eberhard; Buschmann, Ernst; and Pommer, Ernst-Heinrich, to BASF Aktiengesellschaft. Fungicidal alpha-azolylglycols. 4,554,285, Cl. 514-383.000.
Zeeh, Bernd: *See*—
Buschmann, Ernst; Zeeh, Bernd; Jung, Johann; and Sauter, Hubert, 4,554,006, Cl. 71-76.000.
Zehr, John S. Skipping stones and method of use thereof. 4,553,758, Cl. 273-424.000.
Zenith Electronics Corporation: *See*—
Citta, Richard W., 4,554,579, Cl. 358-86.000.
Zenith Radio Corporation: *See*—
Tentler, Michael; Walker, David L.; Bretl, Wayne E.; and Williams, Gregory A., 4,554,581, Cl. 358-120.000.
Zhed, Viktor P.: *See*—
Andreev, Anatoly A.; Gavrilko, Igor V.; Gavrilov, Alexei G.; Vereschaka, Anatoly S.; Zhed, Viktor P.; Padalka, Valentin G.; Sinelschikov, Andrei K.; and Tolok, Vladimir T., 4,554,201, Cl. 428-215.000.
Zieger, Josef: *See*—
Lindenmaier, Klaus; and Zieger, Josef, 4,553,520, Cl. 123-557.000.
Ziegler, Michael J.; and Simpkins, F. Richard, to AGA, A.B. Methods and apparatus for blow molding glass articles. 4,553,999, Cl. 65-84.000.
Ziegler, Walter: *See*—
Reimann, Horst; Ziegler, Walter; Brandstetter, Franz; Theysohn, Rainer; and Pflueger, Richard, 4,554,320, Cl. 525-183.000.
Zielsdorf, Randall A.: *See*—
Karpowicz, John L.; and Zielsdorf, Randall A., 4,554,492, Cl. 318-309.000.
Zihlmann, Siegfried; and Streiff, Werner, to Micafil AG. Method and apparatus for the automatic production of armatures for electric motors. 4,553,321, Cl. 29-598.000.
Ziller, Robert E., to Doboy Packaging Machinery, Inc. Finwheel servo drive for packaging machine. 4,553,368, Cl. 53-51.000.
Zimmer, James E.; and Salvador, Linda M., to United States of America, Air Force. Method for preparing an improved pitch impregnant for a carbon-carbon composite. 4,554,024, Cl. 106-284.000.
Zimmermann, Anso, to Rotpunkt Dr. Anso Zimmermann. Insulated container. 4,553,676, Cl. 215-13.00R.
Zimmermann, Matthias: *See*—
Schluter, Gert; and Zimmermann, Matthias, 4,554,073, Cl. 210-450.000.
Zimmermann, William J., Jr.: *See*—
Fox, Sidney J.; Yeskel, Filip J.; and Zimmermann, William J., Jr., 4,554,593, Cl. 358-282.000.
Zimmern, Bernard: *See*—
Noda, Sadafumi; and Zimmern, Bernard, 4,553,399, Cl. 62-84.000.
Zinbo, Mikio; Jensen, Ronald K.; and Johnson, Milton D., to Ford Motor Company. Non-metallic, antioxidant, antiwear lubricant additive system. 4,554,085, Cl. 252-46.600.
Zirngibl, Ludwig; and Thiele, Kurt, to Siegfried Aktiengesellschaft. Method for production of imidazolyl vinyl ethers. 4,554,356, Cl. 548-341.000.
Zucchi, Gianfranco: *See*—
Biadigo, Mario; and Zucchi, Gianfranco, 4,553,920, Cl. 425-267.000.
Zuckerman, Arie J.: *See*—
Skelly, Jacinta; Howard, Colin R.; and Zuckerman, Arie J., 4,554,157, Cl. 424-89.000.
Zuerger, Manfred: *See*—
Schulz, Guenther; and Zuerger, Manfred, 4,554,240, Cl. 430-285.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF NOVEMBER, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Chabala, John C.; Fisher, Michael H.; and Mrozik, Helmut H., to Merck & Co., Inc. 13-Halo and 13-deoxy derivatives of C-076 compounds. Re. 32,034, Cl. 549-264.000.

Fisher, Michael H.: *See*—
Chabala, John C.; Fisher, Michael H.; and Mrozik, Helmut H., Re. 32,034, Cl. 549-264.000.

Foam Cutting Engineers, Inc.: *See*—
Pettingell, Winslow L., Re. 32,032, Cl. 264-101.000.

General Motors Corporation: *See*—
Winchell, Frank J., Re. 32,031, Cl. 280-282.000.

Hitachi, Ltd.: *See*—
Kuroiwa, Hiroshi; and Sasayama, Takao, Re. 32,035, Cl. 361-154.000.

Kuroiwa, Hiroshi; and Sasayama, Takao, to Hitachi, Ltd. Electromechanical transducer controlling device. Re. 32,035, Cl. 361-154.000.

Merck & Co., Inc.: *See*—
Chabala, John C.; Fisher, Michael H.; and Mrozik, Helmut H., Re. 32,034, Cl. 549-264.000.

Montgomery, Robert M.: *See*—
Moreland, James R.; and Montgomery, Robert M., Re. 32,033, Cl. 430-311.000.

Moreland, James R.; and Montgomery, Robert M., to Texas Instruments Incorporated. Automated slice processing. Re. 32,033, Cl. 430-311.000.

Mrozik, Helmut H.: *See*—
Chabala, John C.; Fisher, Michael H.; and Mrozik, Helmut H., Re. 32,034, Cl. 549-264.000.

Pettingell, Winslow L., to Foam Cutting Engineers, Inc. Method of densifying open-celled polyurethane material. Re. 32,032, Cl. 264-101.000.

Sasayama, Takao: *See*—
Kuroiwa, Hiroshi; and Sasayama, Takao, Re. 32,035, Cl. 361-154.000.

Texas Instruments Incorporated: *See*—
Moreland, James R.; and Montgomery, Robert M., Re. 32,033, Cl. 430-311.000.

Winchell, Frank J., to General Motors Corporation. Cambering vehicle. Re. 32,031, Cl. 280-282.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

AFA Corporation, The: *See*—
Steyns, Emile B.; and Miller, Jerry H., B1 4,072,252, Cl. 222-341.000.

American Standard Inc.: *See*—
Ruff, Robert O., B1 4,213,317, Cl. 70-450.000.

Andersen, Walter, to Kremm, Virginia. Method of making a parison. B1 3,171,729, 11-19-85, Cl. 65-76.000.

Elkins, Carlos D. Transparent slide for the examination of liquid specimens. B1 3,777,283, 11-19-85, Cl. 356-246.000.

Fegen, James F., to Richco Plastic Company. Locking base for plastic components. B1 3,909,883, 11-19-85, Cl. 174-138.00D.

Kremm, Virginia: *See*—
Andersen, Walter, B1 3,171,729, Cl. 65-76.000.

Maryland Cup Corporation: *See*—
Weinstein, David, B1 4,289,791, Cl. 426-139.000.

Miller, Jerry H.: *See*—
Steyns, Emile B.; and Miller, Jerry H., B1 4,072,252, Cl. 222-341.000.

Richco Plastic Company: *See*—
Fegen, James F., B1 3,909,883, Cl. 174-138.00D.

Ruff, Robert O., to American Standard Inc. Blank filler plate for lock edge cut-out. B1 4,213,317, 11-19-85, Cl. 70-450.000.

Steyns, Emile B.; and Miller, Jerry H., to AFA Corporation, The. Hand operated sprayer with automatic container vent. B1 4,072,252, 11-19-85, Cl. 222-341.000.

Weinstein, David, to Maryland Cup Corporation. Ice cream cone with jacket attached and method for producing same. B1 4,289,791, 11-19-85, Cl. 426-139.000.

LIST OF DESIGN PATENTEES

A. Ahlstrom Osakeyhtio: *See*—
Tuomaala, Jorma, 281,432, Cl. D15-139.000.

Abe, Karl H., to Bayerische Motoren Werke AG. Combined rear-view mirror and direction indicator for motorcycles. 281,411, 11-19-85, Cl. D12-188.000.

American Standard Inc.: *See*—
Stairs, Henry M., Jr., 281,449, Cl. D23-58.000.

Appel, Mel; and Kress, George, to Appel, Mel. Toy trackway. 281,444, 11-19-85, Cl. D21-143.000.

Applied Computer, Inc.: *See*—
Meininger, Charles L.; and Bugash, Robert S., 281,421, Cl. D14-52.000.

Baffo, Charles M.; and Geismar, Thomas H., to Mobil Oil Corporation. Service station island. 281,427, 11-19-85, Cl. D15-9.200.

Barnhart, Leslie C. Trim strip for a truck sleeper compartment. 281,412, 11-19-85, Cl. D12-190.000.

Baxter Travenol Laboratories, Inc.: *See*—
DiGianfilippo, Al; and Hitchcock, James, Jr., 281,453, Cl. D24-31.000.

Bayerische Motoren Werke AG: *See*—
Abe, Karl H., 281,411, Cl. D12-188.000.

Bayerische Motoren Werke Aktiengesellschaft: *See*—
Gevert, Klaus V., 281,410, Cl. D12-182.000.

Beach, Wilma R., to Daniel E. Gelles Associates, Inc. Article display bracket. 281,383, 11-19-85, Cl. D6-572.000.

Benjamin Crook & Sons Limited: *See*—
Peel, Simon J., 281,370, Cl. D2-319.000.

Blue Box Toy Factory Limited: *See*—
Takeuchi, Kazutaka, 281,442, Cl. D21-141.000.

Brio Toy AB: *See*—
Petersson, Nils A. I., 281,440, Cl. D21-108.000.

Bugash, Robert S.: *See*—
Meininger, Charles L.; and Bugash, Robert S., 281,421, Cl. D14-52.000.

Bulgari, Gianni, to Ditta Sotirio Bulgari di Constantino e Giorgio Bulgari S.a.s. Link for jewelry chain. 281,405, 11-19-85, Cl. D11-93.000.

Buscher, John H.; and Hoffman, Michael E., to Eastman Machine Company. Electrical connector. 281,416, 11-19-85, Cl. D13-24.000.

Byrne, Philip J.; and Stege, John B. Computer work station. 281,382, 11-19-85, Cl. D6-474.000.

C.A. Weismuller GmbH & Co.: *See*—
Nusse, Octavio, 281,415, Cl. D13-24.000.

Caldwell, John W. Projection television receiver. 281,424, 11-19-85, Cl. D14-83.000.

Cambria, Emanuel F., to Hurst Performance, Inc. Shift control lever unit. 281,409, 11-19-85, Cl. D12-179.000.

Chrones, Anthony, to Gerber Products Company. Child's musical mobile music box cover. 281,433, 11-19-85, Cl. D17-24.000.

Cincinnati Incorporated: *See—*
Urochevich, Miroslav, 281,430, Cl. D15-123.000.

Cody, Michael J.: *See—*
Prince Corporation; and Cody, Michael J., 281,413, Cl. D12-191.000.

Cosden Technology, Inc.: *See—*
Fortuna, Vincent E., 281,399, Cl. D9-347.000.
Fortuna, Vincent E., 281,400, Cl. D9-370.000.

Dah Yang Toy Industrial Co., Ltd.: *See—*
Udagawa, Yoshio, 281,445, Cl. D21-150.000.

Daniel E. Gelles Associates, Inc.: *See—*
Beach, Wilma R., 281,383, Cl. D6-572.000.

Deacon & Co. Limited: *See—*
Wong, Dennis C., 281,438, Cl. D21-63.000.

Dearing, Timothy, to E. R. Howard Limited. Bottle or the like. 281,397, 11-19-85, Cl. D9-338.000.

DiGianfilippo, Al; and Hitchcock, James, Jr., to Baxter Travenol Laboratories, Inc. Stand for intravenous equipment. 281,453, 11-19-85, Cl. D24-31.000.

Ditta Sotirio Bulgari di Constantino e Giorgio Bulgari S.a.s.: *See—*
Bulgari, Gianni, 281,405, Cl. D11-93.000.

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66 4,553,494
144 R 4,553,496
218 4,553,495
246 4,553,497

CLASS 118

126 4,553,498
428 4,553,499
657 4,553,500
669 4,553,501

CLASS 122

4 D 4,553,502

CLASS 123

18 A 4,553,503
25 J 4,553,504
41.2 4,553,505
45 R 4,553,506
52 M 4,553,507
58 AA 4,553,508
90.27 4,553,509
90.34 4,553,510
179 B 4,553,511
196 S 4,553,512
204 4,553,513
308 4,553,514
4,553,515
339 4,553,516
417 4,553,517
478 4,553,518
527 4,553,519
557 4,553,520
587 4,553,521

CLASS 124

89 4,553,522

CLASS 126

9 B 4,553,523
25 R 4,553,524
30 4,553,525
58 4,553,526
4,553,527
123 4,553,528
415 4,553,529
422 4,553,530
440 4,553,531

CLASS 128

1 D 4,553,532
1 R 4,553,533
24.1 4,553,534
88 4,553,535
130 4,553,536
132 D 4,553,538
4,553,539
132 R 4,553,537
200.26 4,553,540
314 4,553,541
334 R 4,553,542
4,553,543
340 4,553,544
341 4,553,545
395 4,553,546
419 PG 4,553,547
421 4,553,548
4,553,549
505 4,553,550
567 4,553,551
637 4,553,552
749 4,553,553
784 4,553,554

CLASS 131

110 4,553,555
336 4,553,556

CLASS 132

1 R 4,553,557

CLASS 134

17 4,554,025
38 4,554,026
181 4,553,558

CLASS 137

68 R 4,553,559
218 4,553,560
362 4,553,561
375 4,553,562
494 4,553,563
554 4,553,564
590 4,553,565
625.11 4,553,566

CLASS 138

96 T 4,553,567
125 4,553,568

CLASS 139

1 E 4,553,569
435 4,553,570
446 4,553,571

CLASS 140

92.8 4,553,572

CLASS 141

98 4,553,573
286 4,553,574

CLASS 144

12 4,553,575
194 4,553,576

CLASS 148

11.5 R 4,554,027
38 4,554,028
112 4,554,029
175 4,554,030

CLASS 149

19.3 4,554,031
21 4,554,032

CLASS 152

12 4,553,577
209 R 4,553,578
450 4,553,579

CLASS 156

52 4,554,033
69 4,554,034
89 4,554,035
94 4,554,036
152 4,554,037
196 4,554,038
213 4,554,039
215 4,554,040
276 4,554,041
350 4,554,042
502 4,554,043
510 4,554,044
613 4,554,045
637 4,554,046
643 4,554,047
4,554,048
656 4,554,049
664 4,554,050

CLASS 160

172 4,553,580

CLASS 162

49 4,554,051
203 4,554,052

CLASS 164

16 4,553,581
432 4,553,582
453 4,553,604
458 4,553,583

CLASS 165

30 4,553,584
41 4,553,585
76 4,553,586
95 4,553,587
162 4,553,588

CLASS 166

53 4,553,589
4,553,590
76 4,553,591
248 4,553,592
270 4,553,593
275 4,553,594
278 4,553,595

295 4,553,596
305 R 4,553,597
308 4,553,601
317 4,553,598
332 4,553,599
343 4,553,600

CLASS 169

19 4,553,602
38 4,553,603

CLASS 172

2 4,553,605
19 4,553,606
156 4,553,607
197 4,553,608
647 4,553,609

CLASS 173

1 4,553,610

CLASS 174

14 R 4,554,399
35 GC 4,554,400
37 4,554,401
42 4,554,402
4,554,403
52 FP 4,554,404
68.5 4,554,405
94 R 4,554,406
128 S 4,554,407
135 4,554,408
138 D B1 3,909,883

CLASS 175

71 4,553,611
122 4,553,612
250 4,553,613
302 4,553,614
329 4,553,615

CLASS 177

1 4,553,616
25 4,553,617
183 4,553,618
4,553,619

CLASS 178

19 4,554,409

CLASS 179

2 DP 4,554,418
2 E 4,554,410
37 4,554,411
78 R 4,554,412
99 M 4,554,413
115.5 PS 4,554,414
170 G 4,554,415
170 NC 4,554,416
170.2 4,554,417

CLASS 180

6.48 4,553,620
179 4,553,621
227 4,553,622
247 4,553,623
255 4,553,624
268 4,553,625
307 4,553,626

CLASS 181

135 4,553,627
144 4,553,630
145 4,553,628
176 4,553,629
291 4,553,631

CLASS 182

2 4,553,632
3 4,553,633
134 4,553,634
187 4,553,635
231 4,553,636

CLASS 184

15.1 4,553,637

CLASS 187

9 E 4,553,638
29 R 4,553,639
4,553,640

CLASS 188

24.22 4,553,641
56 4,553,642
71.9 4,553,643
72.4 4,553,644
73.34 4,553,645
196 BA 4,553,646
206 R 4,553,647
273 4,553,648
340 4,553,649

CLASS 192

0.076 4,553,654
4 A 4,553,650
13 A 4,553,651
18 B 4,553,653
18 R 4,553,652
106.2 4,553,655
142 R 4,553,656

CLASS 194

4 R 4,553,657

CLASS 198

369 4,553,658
372 4,553,659
425 4,553,660
428 4,553,661
456 4,553,662
731 4,553,663
814 4,553,664

CLASS 200

5 A 4,554,419
11 TC 4,554,420
43.15 4,554,421
61.91 4,554,422
86 R 4,554,424
144 B 4,554,425
159 B 4,554,426
250 4,554,427
293 4,554,423

CLASS 201

21 4,554,053

CLASS 203

15 4,554,054
89 4,554,055

CLASS 204

2.1 4,554,056
29 4,554,057
110 4,554,058
129.3 4,554,059
157.1 R 4,554,060
181.6 4,554,061
206 4,554,062
254 4,554,063
411 4,554,064

CLASS 205

37 4,553,665
44 R 4,553,666
315.9 4,553,667
391 4,553,668
439 4,553,669
534 4,553,670
611 4,553,671

CLASS 208

59 4,554,065

CLASS 209

3 4,554,066
136 4,554,067
167 4,554,068
615 4,553,672
697 4,553,673

CLASS 210

101 4,554,069
109 4,554,070
198.2 4,554,071
242.3 4,554,072
450 4,554,073
519 4,554,074
611 4,554,075
639 4,554,076
656 4,554,077
749 4,554,078
776 4,554,079

CLASS 211

26 4,553,674

CLASS 212

205 4,553,675

CLASS 215

13 R 4,553,676
33 4,553,677
218 4,553,678
232 4,553,679

CLASS 219

60.2 4,554,429
69 G 4,554,428
108 4,554,430
121 PP 4,554,431
137.43 4,554,432
137.63 4,554,433
216 4,554,434
383 4,554,435
385 4,554,436
388 4,554,437
449 4,554,438
497 4,554,439
501 4,554,440
552 4,554,441

CLASS 220

4 F 4,553,680
72 4,553,681
75 4,553,682
266 4,553,683
268 4,553,684

CLASS 222

1 4,553,685
212 4,553,686
341 B1 4,072,252

CLASS 225

93 4,553,687

CLASS 227

67 4,553,688
139 4,553,689

CLASS 229

2.5 EC 4,553,691
4,553,692
7 S 4,553,693

CLASS 232

7 4,553,694

CLASS 235

88 R 4,554,442
103 4,554,443
379 4,554,444
472 4,554,445
487 4,554,446

CLASS 236

9 A 4,553,695
49 4,553,696

CLASS 237

12.3 B 4,553,697

CLASS 239

3 4,553,698
183 4,553,699
215 4,553,700
432 4,553,701
690 4,553,702

CLASS 241

24 4,553,703
39 4,553,704

CLASS 242

4 R 4,553,705
18 A 4,553,706
25 R 4,553,707
36 4,553,708
47.01 4,553,709
55.2 4,553,710
55.3 4,553,711
58 4,553,712
78.1 4,553,713
84.1 R 4,553,714
100 4,553,715
107.7 4,553,716
198 4,553,717

CLASS 244

3.15 4,553,718
118.1 4,553,719
137 P 4,553,720
213 4,553,721
219 4,553,722

CLASS 246

167 R 4,553,723

CLASS 248

68.1 4,553,724
221.3 4,553,725
297.1 4,553,726
354.7 4,553,727
452 4,553,728

CLASS 249

40 4,553,729

CLASS 250

216 4,554,447
4,554,448
227 4,554,449
231 SE 4,554,450
237 G 4,554,451
305 4,554,455
310 4,554,452
327.2 4,554,453
4,554,454
370 4,554,456
396 ML 4,554,457
492.2 4,554,458
550 4,554,459
578 4,554,460

CLASS 251

1.3 4,553,730
27 4,553,731
30.01 4,553,732
58 4,553,734
129.16 4,553,735
291 4,553,733
334 4,553,736

CLASS 252

8.5 A 4,554,080
8.55 R 4,554,081
8.57 4,554,082
12.4 4,554,083
46.6 4,554,084
49.6 4,554,085
49.9 4,554,086
62.54 4,554,087
62.56 4,554,088
181 4,554,089
187.25 4,554,090
400 R 4,554,091
500 4,554,092
518 4,554,093
522 R 4,554,094
4,554,095
542 4,554,096
547 4,554,097
551 4,554,098
4,554,099

CLASS 254

28 4,553,737
358 4,553,738

CLASS 256

23 4,553,739
33 4,553,740
66 4,553,741

CLASS 260

112.5 R 4,554,100
4,554,101
4,554,102
239 A 4,554,103
245.2 R 4,554,104
397.2 4,554,105
4,554,106
421 4,554,107
455 A 4,554,108
457 4,554,109
463 4,554,110
502.4 R 4,554,111
543 F 4,554,112
927 N 4,554,113

CLASS 261

95 4,554,114

CLASS 264

1.1 4,554,115
1.5 4,554,116
67 4,554,117
73 4,554,118
85 4,554,119
4,554,120
101 Re.32,032
103 4,554,121
130 4,554,122
166 4,554,123
263 4,554,124
266 4,554,125
272.17 4,554,126
324 4,554,127

CLASS 266

156 4,553,742
272 4,553,743

CLASS 267

140.1 4,553,744

CLASS 270

45 4,553,745

CLASS 272

68 4,553,746
118 4,553,747

CLASS 273

1 E 4,553,748
1 R 4,553,749
22 4,553,750
26 A 4,553,751
32 A 4,553,752
67 A 4,553,753
153 S 4,553,754
171 4,553,755
261 4,553,756
369 4,553,757
424 4,553,758

CLASS 277

12 4,553,759
4,553,760
152 4,553,761
4,553,762
153 4,553,763
226 4,553,764

CLASS 279

1 ME 4,553,765

CLASS 280

1.182 4,553,766
11.21 4,553,767
91 4,553,768
276 4,553,769
282 Re.32,031
289 WC 4,553,770
615 4,553,771
628 4,553,772
676 4,553,773
718 4,553,774

CLASS 285

55 4,553,775
212 4,553,776
420 4,553,777

CLASS 294

86.4 4,553,778
147 4,553,779
152 4,553,780

CLASS 296

1 S 4,553,781
4,553,782
31 P 4,553,783
107 4,553,784

CLASS 297

229 4,553,785
440 4,553,786

CLASS 303

6 C 4,553,787
7 4,553,788
54 4,553,789

CLASS 305

12 4,553,790
39 4,553,791

CLASS 307

40 4,554,461
140 4,554,462
252 H 4,554,463
265 4,554,464
269 4,554,465
272 A 4,554,466
279 4,554,467
355 4,554,468
482 4,554,469

CLASS 308

3 R 4,553,792
6 C 4,553,793
4,553,794
4,553,796
6 R 4,553,795

CLASS 310

45 4,554,470
49 R 4,554,471
62 4,554,472
67 R 4,554,473
154 4,554,474
208 4,554,475
239 4,554,476
316 4,554,477

CLASS 313

366 4,554,478
417 4,554,479
446 4,554,480
533 4,554,481
582 4,554,482

CLASS 315

4 4,554,483
4,554,484
169.3 4,554,485
209 R 4,554,486
224 4,554,487
368 4,554,488
399 4,554,489

CLASS 318

130 4,554,490
254 4,554,491
309 4,554,492
444 4,554,493
482 4,554,494
572 4,554,495
600 4,554,496
636 4,554,497
640 4,554,498
696 4,554,499

CLASS 320

31 4,554,500

CLASS 322

29 4,554,501

CLASS 323

208 4,554,502
315 4,554,503
356 4,554,504

CLASS 324

158 F 4,554,505
158 P 4,554,506
158 SC 4,554,507

CLASS 329

101 4,554,508
105 4,554,509

CLASS 330

4.3 4,554,510
9 4,554,511
10 4,554,512
85 4,554,513
149 4,554,514
261 4,554,515

CLASS 331

76 4,554,516

CLASS 332

18 4,554,517

CLASS 333

33 4,554,518
141 4,554,519

CLASS 335

106 4,554,520
125 4,554,521
202 4,554,522

CLASS 336

70 4,554,523

CLASS 337

3 4,554,524
356 4,554,525
379 4,554,526

CLASS 339

9 R 4,553,798
19 4,553,799
22 4,553,797
59 M 4,553,800
4,553,801
74 R 4,553,802
4,553,803
4,553,804
75 MP 4,553,805
94 C 4,553,806
94 R 4,553,807
97 R 4,553,808
275 T 4,553,809

CLASS 340

58 4,554,527
4,554,528
347 DD 4,554,529
365 S 4,554,530
387 4,554,531
501 4,554,532
514 4,554,533
665 4,554,534
689 4,554,535
747 4,554,536
775 4,554,537
799 4,554,538
805 4,554,539
825.44 4,554,540
825.68 4,554,541
825.76 4,554,542
948 4,554,543
953 4,554,544
980 4,554,545

CLASS 343

5 W 4,554,546
7.3 4,554,547
379 4,554,548
700 MS 4,554,549
771 4,554,550
4,554,551
786 4,554,552
4,554,553
895 4,554,554

CLASS 346

1.1 4,554,555
49 4,554,556
74.4 4,554,557
75 4,554,558
76 PH 4,554,559
108 4,554,560
4,554,561
135.1 4,554,562
154 4,554,563
161 4,554,564
201 4,554,565
207 4,554,566

CLASS 350

96.14 4,553,810
96.20 4,553,811
4,553,812
4,553,813
96.21 4,553,814
96.23 4,553,815
166 4,553,816
255 4,553,817
276 R 4,553,818
319 4,553,819
331 R 4,553,820
339 R 4,553,821

377 4,553,822
463 4,553,823

CLASS 351

219 4,553,824

CLASS 354

5 4,553,825

CLASS 355

3 BE 4,553,828
3 DD 4,553,827
4,553,829
3 FU 4,553,826
14 R 4,553,830
26 4,553,831
32 4,553,832
40 4,553,833
53 4,553,834
77 4,553,835

CLASS 356

5 4,553,836
71 4,553,837
237 4,553,838
246 B1 3,777,283
300 4,553,839
333 4,553,840
349 4,553,841
375 4,553,842
4,553,843
376 4,553,844
400 4,553,845
429 4,553,846
445 4,553,847
448 4,553,848

CLASS 357

5 4,554,567
13 4,554,568
15 4,554,569
23.4 4,554,570
24 4,554,571
42 4,554,572
73 4,554,573
74 4,554,574
80 4,554,575

CLASS 358

28 4,554,576
34 4,554,577
65 4,554,578
86 4,554,579
107 4,554,580
120 4,554,581
149 4,554,582
163 4,554,583
165 4,554,584
209 4,554,585
213 4,554,586
228 4,554,587
243 4,554,588
248 4,554,589
4,554,590
256 4,554,591
257 4,554,592
282 4,554,593
283 4,554,594
328 4,554,595
330 4,554,596
335 4,554,597

CLASS 360

14.2 4,554,602
48 4,554,598
69 4,554,599
77 4,554,600
90 4,554,601
94 4,554,603
95 4,554,604
96.1 4,554,605
131 4,554,606

CLASS 361

104 4,554,607
119 4,554,608
4,554,609
144 4,554,610
154 Re.32,035
234 4,554,611
306 4,554,612
386 4,554,613
400 4,554,614
412 4,554,615
424 4,554,616

CLASS 362

61 4,554,617
155 4,554,618
222 4,554,619
269 4,554,620
382 4,554,621

CLASS 363

61 4,554,622
96 4,554,623

CLASS 364

148 4,554,624
200 4,554,625
4,554,626
4,554,627
4,554,628
4,554,629
4,554,630
4,554,632
300 4,554,631
414 4,554,633
431.10 4,554,634
475 4,554,635
481 4,554,636
518 4,554,637
521 4,554,638
556 4,554,639
710 4,554,641
716 4,554,640
724 4,554,642

CLASS 365

104 4,554,643
154 4,554,644
189 4,554,645
4,554,646

CLASS 366

134 4,553,849

CLASS 367

48 4,554,647
49 4,554,648
68 4,554,649
154 4,554,650

CLASS 368

201 4,553,850
205 4,553,851

CLASS 369

13 4,554,651
44 4,554,652
45 4,554,653
54 4,554,654
275 4,554,655

CLASS 370

85 4,554,656
4,554,657
4,554,658
88 4,554,659
94 4,554,660

CLASS 371

15 4,554,661
20 4,554,662
4,554,663
25 4,554,664
55 4,554,665

CLASS 372

19 4,554,666
83 4,554,667

CLASS 374

1 4,553,852
25 4,553,853
129 4,553,854

CLASS 375

1 4,554,668
4,554,669
30 4,554,670
4,554,671
40 4,554,672
118 4,554,673

CLASS 376

252 4,554,128
298 4,554,129

CLASS 377

17 4,554,674
60 4,554,675

CLASS 378

170 4,554,676

CLASS 384

95 4,553,859
99 4,553,855
276 4,553,856
398 4,553,857
473 4,553,858

CLASS 400

68 4,553,860
120 4,553,861
121 4,553,862
4,553,863
4,553,864
124 4,553,865
144.2 4,553,866
323 4,553,867
356 4,553,868
568 4,553,869
662 4,553,870

CLASS 401

195 4,553,871

CLASS 403

25 4,553,872
245 4,553,873

CLASS 404

4 4,553,874
6 4,553,875

CLASS 405

50 4,553,876
154 4,553,877
203 4,553,878
270 4,553,879

CLASS 406

23 4,553,880
115 4,553,881
181 4,553,882

CLASS 408

130 4,553,883
143 4,553,884

CLASS 409

201 4,553,885
233 4,553,886

CLASS 410

119 4,553,887
144 4,553,888

CLASS 411

21 4,553,889
318 4,553,890
351 4,553,891

CLASS 414

121 4,553,892
152 4,553,893
331 4,553,894
401 4,553,895
495 4,553,896
559 4,553,897
573 4,553,898
629 4,553,899
745 4,553,900

CLASS 415

138 4,553,901

CLASS 417

34 4,553,902
204 4,553,903
218 4,553,904
222 4,553,905
295 4,553,906
297 4,553,907
310 4,553,908
369 4,553,909
378 4,553,910

CLASS 418

1 4,553,911
54 4,553,912
55 4,553,913
69 4,553,914
102 4,553,915
173 4,553,916

CLASS 419

8 4,554,130

CLASS 420

546 4,554,131

CLASS 422

68 4,554,132
87 4,554,133
100 4,554,134
148 4,554,135
209 4,554,136

CLASS 423

26 4,554,137
53 4,554,138
166 4,554,139
243 4,554,140
245 4,554,141
277 4,554,142
306 4,554,143
321 R 4,554,144
328 4,554,145
329 4,554,146
335 4,554,147
447.1 4,554,148
450 4,554,149
491 4,554,150
551 4,554,151
647 4,554,152
4,554,153

CLASS 424

16 4,554,154
22 4,554,155
81 4,554,156
89 4,554,157
4,554,158
4,554,159
114 4,554,160
115 4,554,161
117 4,554,162
195.1 4,554,163

CLASS 425

6 4,553,917
46 4,553,918
90 4,553,919
267 4,553,920
279 4,553,921
381.2 4,553,922
393 4,553,923

CLASS 426

36 4,554,165
139 B1 4,289,791
276 4,554,166
285 4,554,167
473 4,554,168
576 4,554,169
651 4,554,170

CLASS 427

4 4,554,171
12 4,554,172
44 4,554,174
4,554,175
120 4,554,173
125 4,554,176
130 4,554,177
140 4,554,178
163 4,554,179
248.1 4,554,180
261 4,554,181
304 4,554,182
306 4,554,183
345 4,554,184
385.5 4,554,185
387 4,554,186
4,554,187
393.5 4,554,188

CLASS 428

11 4,554,189
35 4,554,190
4,554,191
4,554,192
40 4,554,193
4,554,194
49 4,554,195
67 4,554,196
113 4,554,197
143 4,554,198
194 4,554,199
207 4,554,200
215 4,554,201
225 4,554,202
229 4,554,203
246 4,554,204
253 4,554,205
261 4,554,206
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	362	281,377
	379	281,378
	382	281,379
	404	281,380
	471	281,381
	474	281,382
	572	281,383
D7—	46	281,384
	84.1	281,385
	317	281,386
D8—	13	281,387
	22	281,388
	40	281,389
		281,390
	61	281,391
	90	281,392
	373	281,393
	401	281,394
D9—	307	281,395
	309	281,396
	338	281,397
	341	281,398
	347	281,399
	370	281,400
D10—	75	281,401
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	93	281,403
	99	281,404
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	153	281,406
	181	281,407
D12—	147	281,408
	179	281,409
	182	281,410
	188	281,411
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	191	281,413
D13—	2	281,414
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		281,416
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	125	281,431
	139	281,432
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D18—	1	281,434
	7	281,435
D20—	43	281,436
D21—	24	281,437
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	108	281,440
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	143	281,443
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	244	281,447
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